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Detailed report stressing medical manpower needs and assessing medical education picture in the West. Deals with: Physician-to-population ratios; projected increase of applicants 1960-65; doctors needed by 1975; residence restrictions; high costs of medical education; rising operating costs of medical schools; WICHE medical exchange program; and other basic problems. Presents recommendations for study and action.

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The WEST'S MEDICAL MANPOWER NEEDS

THE WESTERN INTERSTATE COMMISSION FOR HIGHER EDUCATION

ED 000306

7038

The Western Interstate Commission for Higher Education is a public agency organized under the Western Regional Education Compact to promote interstate cooperation in Western higher education.

Members

- Alaska
- Arizona
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- Montana
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- Oregon
- Utah
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PREFACE

In the West, interest in the health sciences has been keen for at least three reasons. First, the population of the West has been growing at a much faster rate than the rest of the country. Health facilities will have to expand to keep pace with this growth. Second, the extension of prepaid and other medical care plans has helped to bring about a greater public awareness of the importance of good health. More people are demanding and can afford good medical care. Third, the necessity of training a sufficient number of qualified doctors has caused medical educators to examine the role of medical education in providing for the future health needs of the people.

Since 1953 the West has shared its medical education resources on an interstate basis. Students from Western states without medical schools have been given the opportunity to study medicine in Western schools, and nearly 400 have taken advantage of the provisions of the student medical exchange program operated by the Western Interstate Commission for Higher Education. But the responsibility of WICHE does not stop here. WICHE is charged, in the words of the Western Interstate Compact, with "[undertaking] studies of needs for professional and graduate educational facilities in the Region, the resources for meeting such needs, and the long-range effects of the Compact on higher education; and from time to time to prepare comprehensive reports on such research. . ." In August, 1956, the Commission requested the staff to make a study of medical manpower and medical education resources in the West. The present study is one of a series by WICHE on Western needs in the health sciences.

Because of limitations of time and data, no analysis was made of the role of schools of osteopathy in meeting the West's medical manpower needs.

None of these studies can be the last word. The West is living, growing; its needs are constantly changing. Continuous inventories are necessary. This study can point up the fact of shortages, but it is the responsibility of each individual state in the Compact to place the facts in the context of its total needs for higher education. The broad policy of the Commission is to stimulate discussion of the serious problems involved in managing our resources with maximum effectiveness.

As this commission has repeatedly pointed out, every state in the West is faced with rapidly rising college enrollments. We cannot double, or in some states even triple, our college enrollments in the next decade without greatly increased expenditures by the states. The new generation of college students must provide America, not only with doctors, but with school teachers, scientists, engineers, businessmen, administrators, and with all the professional skills needed by our fast-growing and changing society.

We live in an age of manpower shortages in many professional fields. This report finds that the West will need more doctors and that it will need to expand its facilities for medical education, but it cannot say that priority should be given to medical education at the expense, say, of physics or engineering, or philosophy. Western education must expand, but it must expand in many fields. Each state must decide for itself what it wants and needs and is willing to pay for, in the light of its total educational needs. Hence, this study is offered as a basis for continued discussion by interested persons in each of the Western states.

Because so many groups have a stake in this report, the Commission created a Medical Advisory Committee composed of distinguished medical educators, eminent physicians, representatives of the American Medical Association, and the Association of American Medical Colleges, and leaders in higher education.

The Committee has reviewed several drafts of the study, providing many useful criticisms and suggestions. At its concluding meeting in San Francisco on February 13-14, 1959, the Committee endorsed the Findings and Recommendations, which appear on pages 11 and 12.

The report reflects the contributions of many persons. Dr. Ward Darley, Director of the Association of American Medical Colleges, and Dr. Edward Turner, Director of Scientific Activities for AMA, worked very closely with the staff and served as Special Consultants to the Advisory Committee. Dr. Leroy Burney, Surgeon General and Head of the U. S. Public Health Service, was extremely helpful in providing data from Public Health Service studies currently under way. Dayton D. McKean, Dean of the University of Colorado Graduate School, prepared the text of the report with extensive assistance from Mrs. Lillian McCall.

To the members of the Medical Advisory Committee, who gave so unstintingly of their time and effort, we owe a debt of gratitude. Richard Stull, the chairman, worked long and hard. The respected group of persons on the Committee gives assurance that their findings and recommendations will receive thoughtful consideration by all concerned in the medical profession, the medical schools, higher education, and state governments.

HAROLD L. ENARSON, *Director*
Western Interstate Commission
for Higher Education

STATEMENT OF CHAIRMAN OF MEDICAL EDUCATION STUDY ADVISORY COMMITTEE TO WESTERN INTERSTATE COMMISSION FOR HIGHER EDUCATION, MEDFORD, OREGON, AUGUST 8, 1959

Over a year ago the Western Interstate Commission for Higher Education directed the staff to prepare a report assessing the medical education picture in the West. The report is now before you for your consideration as to its ultimate use and manner of distribution. We are concerned not only with the contents of the report but with how its recommendations are to be acted upon.

The committee of experts which took on the assignment of reviewing and revising the staff study was carefully chosen to represent the widest cross-section of informed opinion concerned with medical education and medical practice. It consisted of eminent physicians, medical educators, university presidents, officials of state medical societies and consultants from the American Medical Association and the Association of American Medical Colleges. The review process was long and involved. We wanted a report that set forth the facts plainly, that examined their implications and recommended action on which we could all agree.

With a review body representing so many diverse medical and educational interests there was bound to be some disagreement about medical education policies, in relation to needs and programs. Every one on this committee had his say. The report now before you is the consensus of the review committee, and their endorsement of this report was virtually unanimous.

Last October the full committee met for two days in San Francisco. We read the first draft together, discussed in detail our major areas of disagreement, laid down the principles of the kind of report we thought would be useful and instructed the staff on the revision of the first draft. At this meeting we all agreed that, despite its obvious limitations, the physician-population ratio per 100,000 population was the only practical yardstick for projecting future needs. We also agreed to apply this ratio—*as it currently existed* in each Western state—to the future population of the respective states. This decision meant that all estimates of future needs were to be highly conservative, based only on minimum standards—assuming that population projections are accurate.

At the conclusion of this first meeting, each member agreed to review the report in detail, and to send in his criticisms and suggestions for revision to the staff within two weeks. It was agreed, because of the length of the report and the time schedule involved, that the second draft be reviewed in Denver by a task committee. The task committee, which included both medical consultants, met for two days. On this occasion the findings and recommendations were hashed over, argued over, picked apart, put together again—and finally agreed upon. *We thought!* Copies of the preliminary set of recommendations were then sent to the full committee for review and a date set for the final meeting, which was held in San Francisco. The committee reviewed the third and final draft which included the findings and recommendations. And then the fun began. I will skip hastily over the smoke and the fire and say only that when we finished, we all felt we had a first-rate report which we could stand behind. This is the report I presented to your executive committee in Phoenix, which they approved in principle, pending authorization by the entire commission for publication.

The findings and recommendations are now before you. The question is what to do about them. There are reports and reports—thousands of them. Most become dust collectors, but this report is too important to be neglected. It sets forth a problem which is but one facet of the total higher education needs of the West. However, it is up to the local bodies to weigh and assign priorities because only they can decide which local needs are most important and how limited resources to meet these needs should be allocated.

Medical education is a matter of great concern to the public since it involves the public welfare. Unless medical societies, practicing physicians, public health officials, legislators, university administrators — in sum, all who are concerned with the public interest — can work together to solve this problem, it will be taken out of their hands by misinformed enthusiasts who will play upon public opinion to press for unwise and extravagant programs. This could happen because medical education and medical care intimately affect the lives of all of us. We who have a stake in this must work out a reasonable and financially sound solution for these problems. If the public is stampeded into forcing through unsound and costly programs for the mass production of physicians—which has been the experience elsewhere in the world—not only will we fail to meet our medical education needs, but, besides lowering the quality of medical care, much energy and much money will be siphoned off needlessly from our other higher education needs. We have in the past consistently striven to raise the academic standards of medical education—from the barbershop, through the diploma mills of the turn of the century, to the highest level of scientific technological and educational methods. As a result, in the last twenty years more progress has been made in medicine than in all of previously recorded history. This progress must be continued. The destiny of our medical schools—indeed the health of our future population—is in the hands of people like you who are charged with the responsibilities of public leadership.

We must look for better, more economical methods of meeting medical education needs without endangering the high quality of teaching and research. This may mean innovations in medical education practices. Milo H. Fritz, the Past President of the Alaska Territorial Medical Association, recently observed:

> It is well known that nothing approaches the resistance accorded a new idea and that too often the entrenched, the vested, the powerful and the recognized authority in any field are notoriously resistant to anything new.

The time is past when medical educators can rest on sacred and fixed traditions of how doctors should be taught. The time is past when university officials can seclude themselves in the protective shell of a static academic environment, blind to the realities of the world in which they live. We must think imaginatively; we must see clearly; we must come up with new solutions—and we must have courage to carry them through. Medical educators will depend on the moral support they need from you who represent an enlightened public leadership.

What does this report say to you and what does it recommend that you do? On the surface its message is clear and direct. It states simply that unless we increase the production of doctors we will not have enough to meet the needs of a rapidly growing population. Does it say that the only answer to the problem of an impending physician shortage is to rush headlong into the building of costly new medical schools? No. This the report does not say. On the contrary, the report emphasizes the manifold complexities of these critical problems and the difficulties to be encountered in solving them.

What does this report actually recommend? First, it says that before we can solve the problems, we must carefully evaluate them. Therefore, it endorses a comprehensive survey of the needs and resources of each state in the Compact. Such a survey would cover population data, information on financial resources, migration patterns—interstate movement of physicians in relation to interstate movement of total populations

—consideration of varying local conditions, preexisting educational facilities and how expansion programs can be tied into affiliation potentials as opposed to building new facilities, the availability of teaching manpower, the availability of what is unflatteringly but universally known as clinical material—medical cases useful for teaching purposes—licensing procedures and a host of other factors that transcend political and geographic boundaries.

The report states that no single solution can be applied in any one of the Western states. A possible approach in certain situations is to expand existing schools. Further study might reveal that it is more economical to expand existing schools to their maximum potential *prior* to creating brand new schools. However, we must remember this avenue is limited, and we cannot reasonably expect the *mere* enlargement of existing schools to meet all the needs of our vast and unevenly growing West.

This report says that each western medical school individually and cooperatively should review its admissions policies in the light of regional and local needs. What would this mean in practice? It would mean liberalizing residence restrictions and interstate sharing of costs, both capital and operating, on a fair and equitable basis. Such a policy would enhance the possibility of each western school's realization of its maximum student potential.

This report recommends, further, that western medical educators meet for the purpose of pooling their knowledge and sharing their experience for the development of programs which would permit the best use of physical facilities and teaching resources.

The report reminds us that the medical profession needs a fair share of our best young minds. This necessitates active recruitment programs, counseling services and the establishment of adequate loan and scholarship funds. In this the medical profession itself has a real stake.

The revolutionary strides of modern medicine in the past two decades have been in large part due to the combined efforts of physicians and basic scientists. No modern medical school can exist or keep pace with new developments in the health sciences without integrating strong basic science personnel into its program. Any new medical education program must therefore be university oriented if it is to draw upon the wealth of information and knowledge inherent in the inter-disciplinary structuring of the university environment. In the application of the developments of medical science, the medical school should be able to draw on the knowledge of the sociologists, the psychologists, the economists, the anthropologists, and others who deal with the problems of man in his total environment. The medical school cannot function in a purely scientific and technical vacuum.

This backing up of the medical school teaching and research programs by the university is one of the major reasons that the committee did not endorse the establishment of independent two-year medical schools. The four-year school was recognized by the committee as the basic educational unit for the training of physicians. Two-year schools were not looked upon with favor. Past experience and present opinions of medical educators indicated that two-year schools, as a primary objective, are poor substitutes for a well planned, even though slowly developed, four-year school. However, we all felt that consideration should be given to establishing two-year programs of basic medical sciences as one means of assisting in the solution of the problem of training more physicians, on the conditions that they are set up within the framework of a strong university and geared to the curriculum of the last two years of a four-year medical school. Soundly planned along these lines and with the full cooperation of university and medical school administrators, this type of program could constitute a feeder system by filling vacancies in the upper division of four-year schools.

The report says there is a need for new medical schools. When this need has been definitely established for a particular area it is important that all concerned recognize that, although the initial capital outlay for building is great, the cost of operating the programs represents a continuing and even greater financial responsibility which must be maintained to safeguard high standards of education and research. Once this responsibility has been assumed, it must be kept up. Without keeping this fact always before us, there is a grave danger that individual states and universities may be saddled with an unbearable financial burden which will work to the detriment not only of the medical program itself but to the total university program.

But we dare not be frightened by financial problems. The needs are so great that ways must be found to meet them. Experience indicates that sharing of medical education costs by the university, by governmental agencies (local, state, and federal), and by private philanthropies, has made it possible for us to solve the problems of the past. And, therefore, the success of future ventures demands that all who share in the benefits contribute their proportionate share of the costs.

The report therefore calls attention to the possibility of sharing the cost of medical education through interstate arrangements or even by the establishment of regional schools.

A report that says this should be widely read, and the information it contains about a critical area of higher education and public welfare should be made available to all who have a role to play in carrying through its recommendations. In bringing out this report, Dr. Enarson and his staff have performed a real service for the West and the nation by isolating the many facets of the problem and by focusing attention on the kinds of solutions that are possible. This is the first report—and I have read many more than I care to remember—that goes directly to the heart of the problem in a way that cannot be misunderstood. Yet it leaves all the doors open for bold and imaginative approaches to new programs unhampered by the traditions of the past.

For the Medical Education Study Review Committee.

Richard J. Stull
Vice President
Medical and Health Sciences
University of California

FINDINGS AND CONCLUSIONS OF THE MEDICAL ADVISORY COMMITTEE

1. By 1975 the West will have about 40,000,000 people, according to estimates of the United States Bureau of the Census. This will be an increase of 17,000,000, or about 70 per cent more than the 1955 population. Much of this increase will come from migration. Over three-quarters of the people of the West will probably live in towns and cities.

2. The West currently has about 14 per cent of the population of the nation. By 1975 it is expected to have about 20 per cent. The West now educates 9 per cent of the country's doctors.

3. With all of its well known limitations, the physician-population ratio seems to be the most useful measure against which to project future manpower needs.

   In 1955, the West had 32,840 doctors, about 15 per cent of the national total. The West as a whole had a physician-population ratio of 142 doctors for every 100,000 people. California and Colorado were above the national average of 133, but all the other Western states were below.

   In 1957, the West had 34,056 doctors and a ratio of 137 doctors per 100,000 population.

4. To maintain state physician-population ratios at 1955 levels *for each state* on the basis of the population estimates above, the West will need about 55,000 physicians by 1975, an increase of 70 per cent over the 1955 number.

5. Thus far, the West has depended heavily on outside sources for its supply of physicians. But it cannot be determined whether the rate of physician migration to the West will keep pace with the migration of the total population. Since the entire country faces a physician shortage, it is uncertain whether the West can attract enough doctors from other areas to keep up with its rapidly mounting population.

6. The West should not count on the increased licensure of alien doctors to meet its manpower needs. During the last decade an increasing number of alien doctors and doctors educated abroad has been licensed in this country. In 1956 the number was equivalent to 20 per cent of the graduates of

all American medical schools. Without these alien and foreign-educated doctors the physician-population ratio would have fallen.

In view of the uncertainty of supply and questions of standards, too great a dependence on foreign educated physicians is not a sound approach to the solution of medical manpower shortages.

7. With only 7.4 medical school applicants annually per 100,000 population, the West trails the country as a whole, which has 8.7. Although many other factors influence these ratios, it is observed that western states without medical schools have (a) fewer applicants than the region as a whole, and (b) fewer first year medical students per 100,000 population.

8. The West does not have a sufficient number of places in its nine medical schools to educate all qualified applicants from the West. At present more than half of the students from western states without schools leave the region for their education.

9. Western students will find it increasingly difficult to gain admission to non-western medical schools because of the nation-wide trend, among both public and private institutions, to impose residence restrictions. For the country as a whole, only 30 per cent of all medical students are non-residents of the state in which the school is located. Between 1954 and 1956, out-of-state enrollments dropped from 9 per cent to 4 per cent in publicly-supported schools, and from 53 per cent to 27 per cent in private schools.

10. By 1962, the number of applicants for admission to medical schools is expected to rise sharply. Because of the limited number of places in the West and the decreasing number of out-of-state places, western students are almost certain to be at an increasing disadvantage in the competition for available places.

11. An immediate and substantial expansion of medical education and research facilities and faculties is essential if the West is to:
    (a) maintain current levels of medical manpower while keeping pace with its rapid population growth,
    (b) provide its qualified students with the opportunity for medical education,
    (c) provide faculty necessary to educate increased numbers of medical students,
    (d) safeguard high standards of medical education *and research,* recognizing that research is indispensable to good teaching and advances in medical knowledge.

12. Providing facilities will cost large sums of money, whether for expansion of medical colleges or for the building of new schools. It is imperative that the quality of teaching, practice, and research be vigorously safeguarded as this expansion takes place.

13. Reported plans for expansion will not be sufficient to meet the needs of the West. If the West continues to educate 9 per cent of the total number of doctors, it will need about 170 additional places by 1975, when the West will have 20 per cent of the total population.

    To supply 20 per cent of the yearly total of the 8,700 doctors for the nation, as recommended by the Surgeon General, would mean, in the West, immediate plans for over a thousand more training places — the equivalent of ten or eleven average-sized schools. The committee believes that so great an expansion cannot be expected. Up to 500 more places within the next few years would be a more attainable goal.

14. It takes from 8 to 14 years from the decision to build a medical school before its first graduates are ready to serve the public. Therefore, the West should plan immediately to meet tomorrow's needs, since planning for new medical schools is a long and complicated process.

15. Some western states have neither the population nor the resources to establish and support new medical schools. But two or more such states may be able to cooperate in financing the building and operating of a new medical school. In any event, it is imperative that each western state—with or without a medical school—survey carefully its own future needs and make plans to meet them.

The committee notes with satisfaction that Arizona is taking steps to launch such a comprehensive survey of its own needs and resources.

16. Several states without medical schools are making good use of the WICHE student exchange program. However, others are not.

For the moment, more places exist than are being used by the sending states. There are reasons to believe that this situation will not continue. As pressure for admission grows, fewer places will be available if existing facilities are not significantly expanded.

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RECOMMENDATIONS OF THE MEDICAL ADVISORY COMMITTEE

1. That each western state in cooperation with other states in the region take all steps necessary at least to maintain its existing ratio of physicians to people. To meet this goal, the West should not only expand existing facilities, it should also build new schools. Adequate financial support for capital and operating expenses must accompany such expansion.

2. That the West bring its output of doctors more into line with its increasing percentage of the total population. This means that the West should plan for at least 500 additional graduates per year.

   To provide for this many students will require an average 25 per cent expansion of existing schools, plus the equivalent of three new medical schools of average size.

3. That each medical school in the West review its admissions policy in the light of regional and local needs. This presupposes liberalizing residence restrictions and also interstate sharing of costs on a fair and equitable basis.

4. That the high quality of medical education and research be maintained and strengthened as facilities are expanded.

The Committee recommends for study:

5. That existing western schools give immediate and serious consideration to the possibility of expanding their facilities and to the ways by which expansion may be accomplished.

6. That each western state, either individually or in concert with others, review its medical education needs in detail to determine whether new medical schools are needed.

7. That existing barriers to the licensure of foreign-educated doctors be carefully studied, preferably on a nation-wide basis, as well as state-by-state, with a view to modifying requirements in a manner consistent with the best standards of medical care and professional competence.

8. That, as a basis for sounder planning, the American Medical Association initiate a study of the various factors that restrict or encourage the interstate movement of physicians.

9. That a nation-wide study of the financing of medical education be initiated by the Association of American Medical Colleges.

10. That continuing appraisals of medical education needs and resources in the West be made by the Western Intersate Commission for Higher Education.

Recommendations for Action

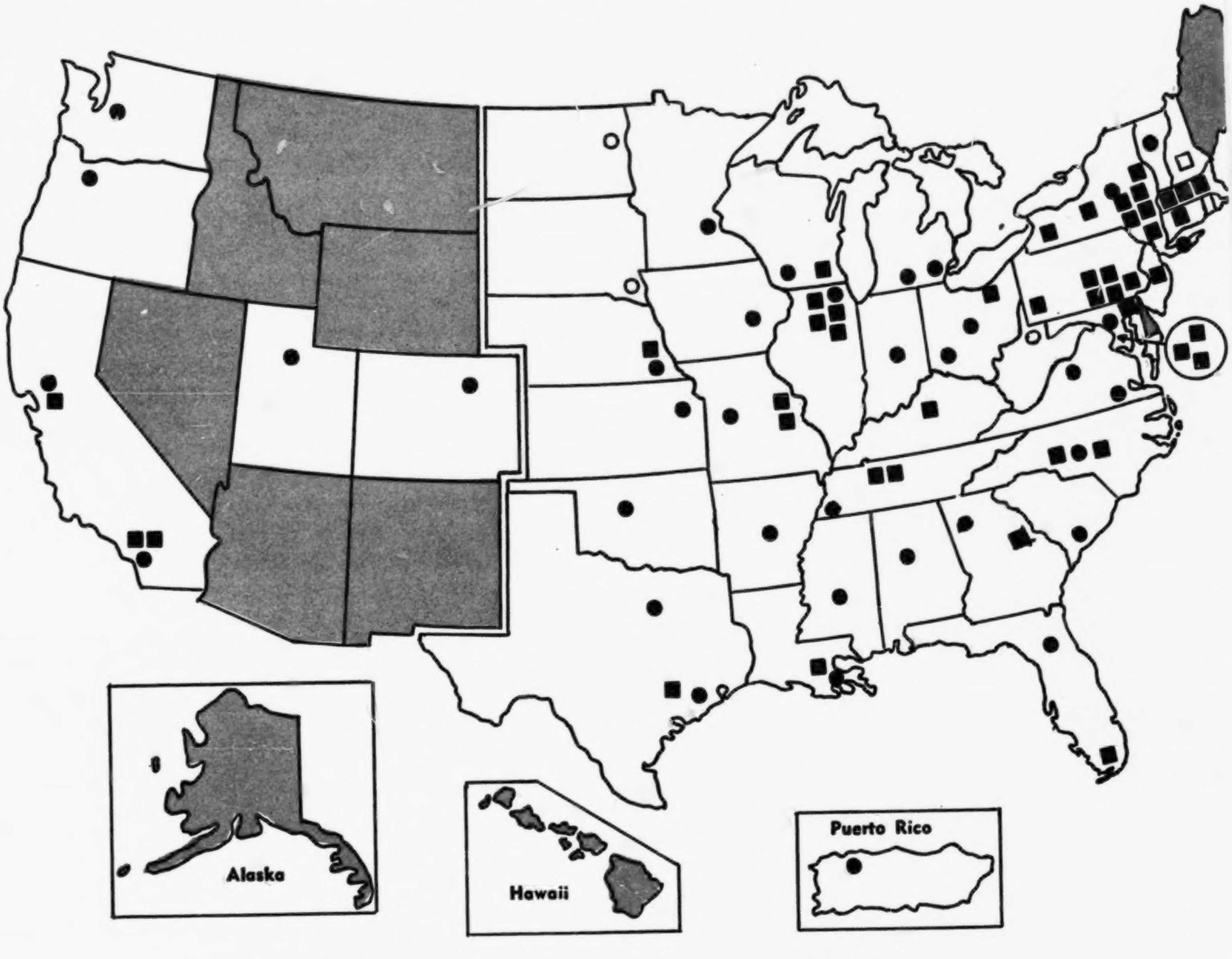
The committee recommends:

11. That Western medical educators meet to exchange views and present recommendations on how facilities and other teaching resources can be used with greater effectiveness to educate needed students at all levels without impairing the quality of medical education.
12. That the medical profession—at national, state, and local levels—in cooperation with western medical schools embark on an active program of recruitment to encourage interested and qualified students in the pursuit of medical careers. Necessary counseling services should be provided at both high school and college levels. Adequate loan and scholarship funds should be provided.
13. That major efforts be made to strengthen and expand graduate and postgraduate education in medicine, especially in the basic sciences, to provide the teachers, researchers, and specialists as well as to keep physicians abreast of advances in medical science.
14. Although we do not endorse the establishment of independent two-year medical schools, we do feel that consideration should be given to establishing two-year programs of basic medical science. If these were created, they could constitute a feeder system to the clinical years of the nation's four-year schools.

    Such programs not only should be set up within the framework of existing universities but must be deliberately planned to fit the last two years of the curriculums of the four-year medical schools.
15. That a regional conference of representatives from western states be held to determine the possibility of pooling state resources by any combination of the following:
    (a) Extension and strengthening of the WICHE student exchange program.
    (b) Interstate arrangements between two or more western states to share the costs of new schools, or expansion of existing schools.
    (c) The establishment of one or more regional schools.
16. That medical societies, university governing boards, legislators, and other public officials work closely together to determine the medical needs of their respective states and to plan and implement their medical education programs.
17. That this report be printed and disseminated, and also that a shortened version be distributed in the West.

FIGURE 1

Location of medical schools by type and control, 1957-58



WESTERN MEDICAL SCHOOLS

* University of California, Los Angeles
* University of California, San Francisco
University of Southern California Medical School
College of Medical Evangelists
Stanford University Medical School
* University of Colorado Medical School
* University of Oregon Medical School
* University of Utah Medical School
* University of Washington Medical School
* Publicly supported schools

LEGEND:

● Public 4-year school
○ Basic science school

■ Private 4-year school
□ Basic science school

INTRODUCTION

The health of its citizens is basic to the strength of a nation. Without a sufficient number of personnel trained in the health sciences, the health of our people will decline. Because numbers of people are growing faster than we are producing the nurses, technicians, researchers, dentists, and physicians they will need, we are faced with a present and growing shortage in health manpower that threatens to become dangerous. The American Medical Association has urged expansion of our medical education facilities.[1] Doctors cannot be multiplied overnight, and our existing medical schools cannot suddenly turn out many more doctors each year than they now do. By the time a doctor accepts his first patient, he has run as long, as tough, and as expensive an educational obstacle course as was ever required by any civilization. "The latent period between the determination to form a medical school and service of the graduates to the people is eight to fourteen years: two to four years to plan the program, construct the buildings, and secure a faculty; four years for medical education and two to six years for hospital training as an intern and resident." [2]

No medical school now in the planning stage can be expected to begin adding substantially to the physician population much before 1970. And by 1975, according to the latest Census Bureau projections, there may be 45,000,000 to 65,000,000 more Americans than there were in 1958. To care for their health we will need 300,000 to 320,000 physicians, or 30 to 40 per cent more than there were in 1958. These estimates presuppose only present physician-population ratios. If health care requirements increase, these estimates will be too low. They do not take into account changes that may result from changing population distribution, both as to age and geography, changing standards of preventive medicine, the growth of clinics, health care centers, or many of the other factors that could affect health standards. But merely to maintain existing ratios means that instead of graduating 6,800 doctors a year (current estimates) we should be graduating about 8,700—there is already a gap between the number of physicians we need and the number of doctors we have, which is widening every year.[3]

The country will need to train many more doctors than it now does. Of these, how many should be trained in the West? Since the problem is a serious one for the country at large, it is of particular significance for the West, which is growing twice as fast as the rest of the country. The West Coast almost doubled its population in the last 20 years. Arizona, California, and Nevada are expected to redouble theirs in the next 20. But as far as medical training facilities are concerned, the West is a have-not region. Of the ten states in the nation without medical schools, seven are in the West. Assuming that as many as a third of the present western doctors are still active in 1975, the nine western medical schools together cannot, with present facilities, train more than one-third of the 55,500 doctors the West probably will need then. Another third will have to come from outside the region. Very little is known about physician migration. But such migration is bound to be affected by population pressures, extension of prepayment plans, location of medical facilities, and new developments in medicine, among many other social and economic factors. At a time when the population is growing rapidly and the economy is expanding, other regions will be competing actively for the services of available doctors. Can the West count on a sufficient flow of physicians from outside the region when the entire country faces a physician shortage? The West has 14 per cent of the population; by 1975 it will have 20 per cent. It educates less than 9 per cent of the country's doctors. The time has come for the West to consider ways to increase its output of doctors.

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[1] See text of the AMA's official position as stated in Appendix B.

[2] Association of American Medical Colleges, "Statement on the Future Needs for Physicians," *Journal of Medical Education*, Vol. 32, (January, 1957), pp. 47-48.

[3] Department of Health, Education, and Welfare, Office of the Secretary, *Final Report of the Secretary's Consultants on Medical Research and Education*, June, 1958, p. 34. Cited hereafter as Bayne-Jones Report.

There are two compelling reasons for concern: first, the West will need many more doctors than it can get from outside; and, second, unless immediate action is taken, many of its qualified students will be unable to study medicine. The bottleneck will be in educational facilities. From 1962 on, more qualified students will want to study than the schools can admit. In the next decade, college enrollments in the West probably will more than double. Competition will become increasingly keen for existing medical training places. Many American medical schools now have some degree of restrictive residence requirements. In 1950, two private schools in New York State virtually closed their doors to out-of-state applicants when the state assumed financial responsibility for their operation. As things stand, many Western college graduates who want and are qualified to study medicine will be denied the chance simply because the West will not have enough medical schools in which to educate them.

Since 1953 WICHE has operated a medical exchange program which provides students from member states that lack a medical school with the opportunity to receive their education in the West. If the student is accepted by any of the nine western schools, his home state pays the receiving school $2,000 a year. About 524 students have attended medical schools under the provisions of the exchange program.

But the question is: will the WICHE medical exchange program be sufficient to take care of the educational and manpower needs of the West in the near future? The student exchange program helps to adjust shortages of facilities among the various member states, but it does little of itself to create additional training facilities.[1] Will such facilities be needed as a consequence of mounting population, growing resources, and increased demands for educational opportunities among the citizens of the West? The present report is an effort to answer these questions.

The shortage of medical manpower is a serious problem, the solution for which calls for bold long-range planning. Above all, planning calls for interstate cooperation. The Western Interstate Commission for Higher Education, an interstate agency of thirteen western states, which is charged with pooling educational resources at the graduate and professional level has, therefore, undertaken this study of medical manpower needs and medical education in the West. WICHE is responsible for conducting studies of educational resources and needs as a basis for interstate planning and action. Three other studies—of dental manpower, mental health training and research, and veterinary medical manpower—have been completed, each with the advice and assistance of representative advisory committees from the member states.

Insofar as is possible—for the problems are complex—this report seeks to establish a factual base on which states and institutions, individually and cooperatively, can act with reasonable assurance to provide undergraduate and graduate medical education of sufficient quality and scope to meet the West's needs, and to determine the adequacy of present medical education resources to provide them. The findings and recommendations of the WICHE Medical Advisory Committee are set down for thoughtful consideration and action by all who are concerned with problems of medical education.

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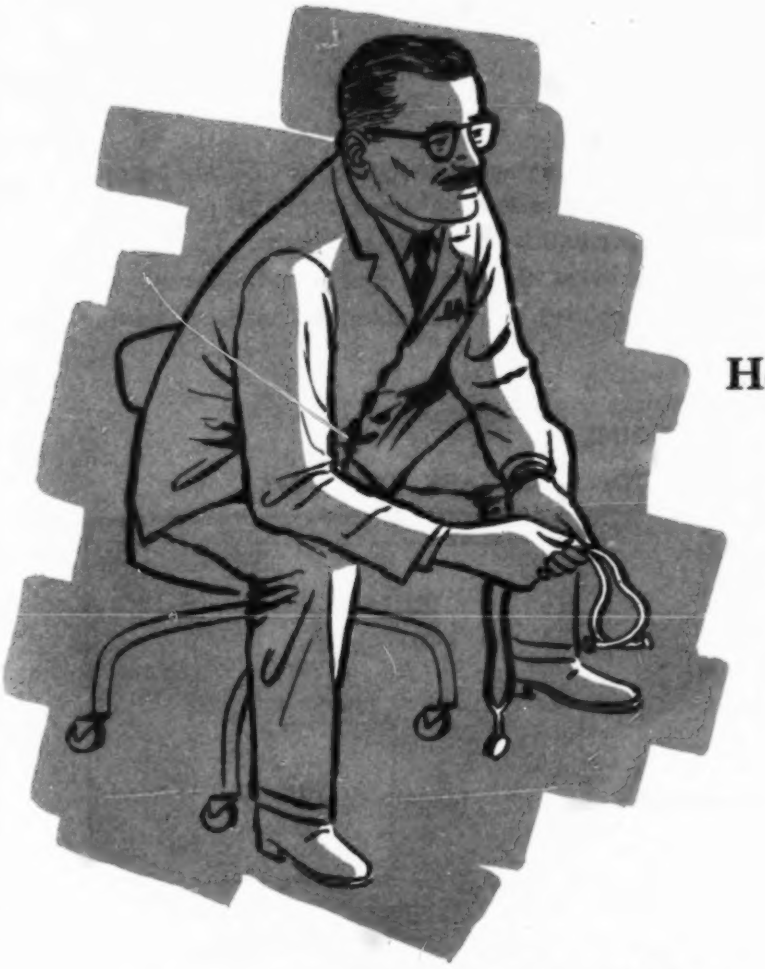
[1] The exchange program, which does not pay towards capital costs, has not been reviewed for six years.



CHAPTER I

How Many Doctors Are Enough?

Nobody knows for certain how many doctors are enough, but virtually everyone agrees that in the next fifteen to twenty years we will not have nearly enough. Why not?

POPULATION EXPLOSION

We are in the midst of an unprecedented population explosion. During the 1930's demographers wrote of a population in "incipient decline." They had logical reasons for projecting a falling trend that began in the Nineteenth Century and which was accelerated by economic conditions during the depression years. Demographers assumed that with increasing industrialization families would have fewer children. But the baby boom of the war years reversed the long-term trend. At first demographers thought the boom was temporary. It continued. Cautiously the experts began to push upward their estimates of future population. Too cautiously. The population continued to grow faster than demographers predicted it would. In 1950, the Census Bureau estimated there would be 193,000,000 Americans by 1975. Since then, the Bureau has periodically raised its sights. Barring war, a major economic depression, or other catastrophe, most demographers agree that in 1975 there will be 220,000,000 Americans—give or take 20,000,000. In other words, the population will increase by at least 18 per cent, possibly 30 per cent, in the next seventeen years. But in the past thirty years there has not been a single instance of demographic overestimation.

Dr. Dudley Kirk described the dimensions of this population explosion in graphic terms for the Congress: "Each year," he pointed out, "we add three million, a population roughly the size of the Detroit metropolitan area. . . There are each day 11,800 new Americans born (now over 90 per cent delivered by physicians in hospitals)." [1]

Only fifty years ago, most babies were delivered at home.

In Dr. Kirk's opinion, present Census Bureau projections are conservative. The Bureau estimates a population in 1975 ranging from 221 million to 243 million, implying a population increase of from 45 million to 65 million. Dr. Kirk says, "We must in any case prepare for the largest absolute increase in population in our history." [2]

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[1] Dudley Kirk, "Population Characteristics and Trends and Their Implications in Medical Education," *Journal of the American Medical Association*, Vol. 167 (May 3, 1958), p. 26.

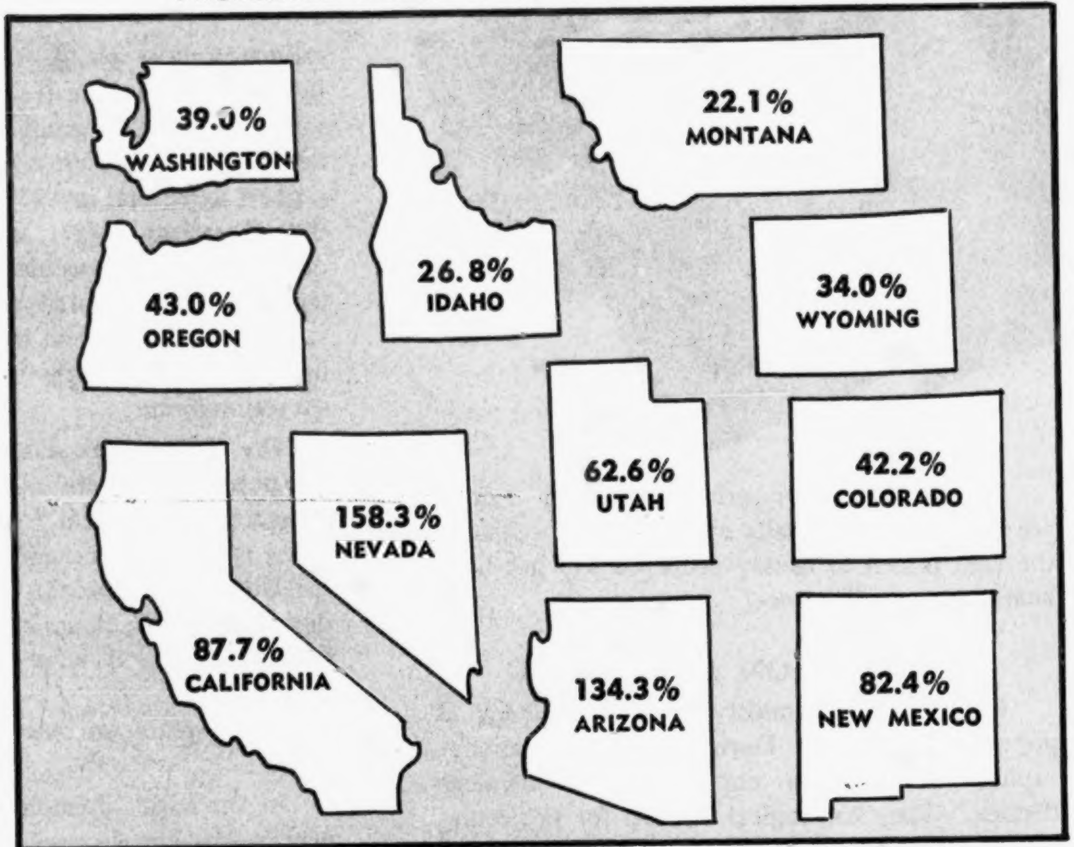
[2] *Ibid*, p. 27. See U. S. Bureau of Census, Population Report P-25, 123, 132, 160, 165, 168.

FROM FARM TO CITY

Ninety-five per cent of this population increase will be in metropolitan areas. By 1975 more than three-quarters of all Americans will live in or near big cities: "The old distinctions between farm and city life in the United States are blurring as the people of the farms move to the cities and people in the cities move into the countryside. Suburban living is becoming the American way of life." [1]

FIGURE 2

PROJECTED POPULATION INCREASE 1954-1975


39.0%
WASHINGTON
43.0%
OREGON
26.8%
IDAHO
22.1%
MONTANA
34.0%
WYOMING
158.3%
NEVADA
87.7%
CALIFORNIA
62.6%
UTAH
42.2%
COLORADO
134.3%
ARIZONA
82.4%
NEW MEXICO

Source: Stanford Research Institute, **Population Trends in the United States through 1975**, p. 6.

This rural-urban-suburban movement has had a profound effect on medical practice. "The upper and middle classes, the ones that use disproportionate percentages of medical service, are becoming more mobile. Each year about 20 per cent of the population changes residence. The classic situation of the family doctor who knows the medical history of his patients by virtue of having treated them from birth seems on the way to complete disappearance. Increasingly, physicians will be faced with the problem of dealing with a segment of a person's life, often with only the aid of the individual's vague knowledge of his own medical history." [2]

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[1] *Op. cit.*, p. 28.

[2] *Ibid.*

HOW MANY DOCTORS WILL BE ENOUGH?

How are our future medical manpower needs to be assessed in the light of great population growth, increasing urbanization, and changing socio-economic conditions? The key question was raised by Dr. Leland S. McKittrick, Chairman of the Council on Medical Education and Hospitals, at the 54th Annual Conference on Medical Education held in February, 1958. "Are those responsible for supplying medical needs to the people in this country aware of what these needs will be in the foreseeable future, say in the next fifteen or twenty years; and are proper and effective efforts being made to meet them?"[1] The answer is far from simple.

It is easy on paper to give or take 20,000,000 people. But what does this mean in terms of medical manpower projections? If we assume only that existing people to doctor ratios should be maintained, then by 1975 we will need 40,000 to 100,000 more doctors, depending on population. These estimates presuppose that the present national ratio of 133 doctors for every 100,000 people is a good yardstick against which to project manpower needs. The question is whether the physician-population ratio is the best available measure for predicting future needs.

"Does such an arithmetical approach," asks Dr. McKittrick, "give proper consideration to the many changing conditions that directly or indirectly affect medical service?"[2]

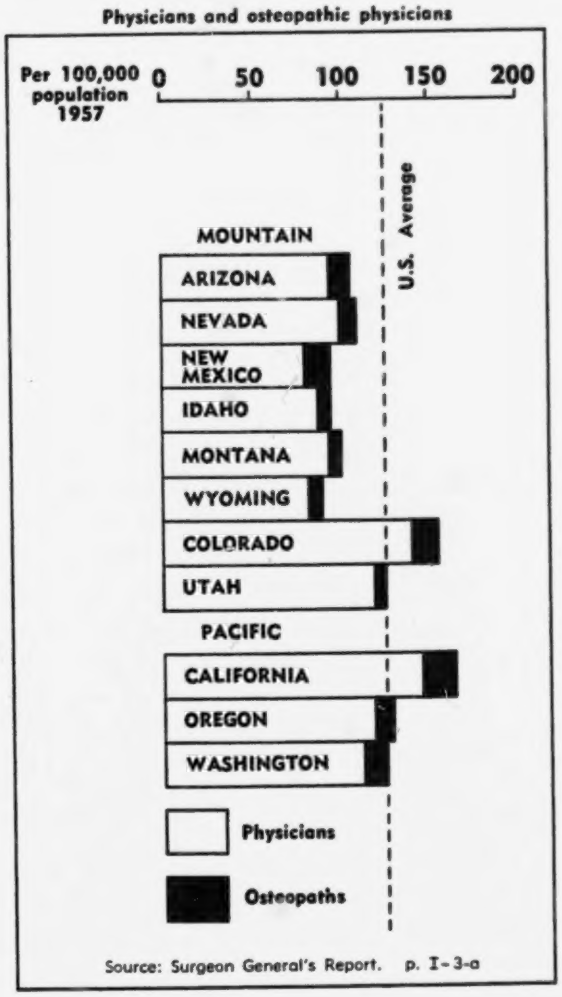
Estimates based on arithmetical ratios do not take into account changing social and economic conditions, technological developments, and many other factors that affect health care requirements. Some of these factors will increase, others decrease, the future need for physicians. Estimates based on arithmetical ratios alone presuppose we *need* exactly the number of doctors we *have*. Many health authorities, however, would agree with Dr. David Allman, former president of the American Medical Association, who maintains:

"One fact, clearly certain, is that efforts to compare unqualified statistics for physician-population ratios in recent years with those early in the century are not only meaningless but actually misleading."[3]

The Executive Director of the Association of American Medical Colleges, Dr. Ward Darley, believes that in assessing our future needs for phy-

FIGURE 3

Physicians and osteopathic physicians



Source: Surgeon General's Report. p. I-3-a sicians, "the most constructive thing to do is to think about the present and the future with very little, if any, reference to the past." He lists factors that call for a possible increase in doctors and those that call for a possible decrease as follows:

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[1] Leland S. McKittrick, "Reason Underlying Conference on Medical Education and Licensure," *Journal of the American Medical Association*, Vol. 167 (May 3, 1958), p. 21.

[2] *Ibid.*

[3] David H. Allman, "American Medicine," Annual Congress on Medical Education and Licensure, *Journal of the American Medical Association*, Vol. 167 (May 3, 1958), p. 24.

> Those factors that would seem to call for an increase are: the increasing size of our population; the increasing numbers of aged people in our population; the increasing prevalence of chronic disease in our population; the expanding medical and public health services of government, industry, public schools and colleges; the development of new specialties; the better distribution of physicians into areas not now adequately supplied; the expanding horizons of health and medical service into the areas of health management and disease prevention and with this the discovery of more but earlier illness; and the *increasing awareness on the part of our people of the increasing effectiveness of medical care and along with this their increasing ability to purchase this care.*
>
> In the second category, those factors that would seem to point to the need for fewer physicians would be those things that are making it possible for a physician to see more patients in less time and also those things that tend to make what time per patient he does have more fruitful. Here would be listed improved transportation and communication, the concentration of population, the development of group practice, the visiting of patients in hospitals instead of in their homes and the increasing use of technicians, assistants and instruments. Other factors that might call for fewer physicians could be: the development of wonder drugs and wonder surgery, the increasing effectiveness of preventive medicine which may mean less illness, particularly serious illness; the increasing amount of medical care being rendered by residents, interns and even medical students; and the disappearance of the period of relative inactivity between the completion of a physician's training and his acquisition of a busy practice.
>
> As to just how these two sets of factors will ultimately balance out, no one can tell, but it is my opinion that as time goes on, the first set of factors will outweigh the second. If this is so, we will definitely need many more physicians than we can graduate with the facilities currently in prospect. But as we look to increasing the number of physicians, it is paramount that our selection of students be done as carefully and our educational standards be held as high as is humanly possible. If we do this, I cannot believe that we will run the risk of producing more physicians than we need.[1]

Below is a brief discussion of the major forces which significantly affect the present and future need for physicians.

REVOLUTION IN MEDICAL PRACTICE

One factor that affects our need for doctors is the state of medical knowledge on which depends the doctor's ability both to cure and prevent disease. If the number of doctors had been multiplied a thousandfold when the plagues were decimating Europe during the Middle Ages, the consequences would not have been materially altered. As many people probably would have died, because doctors knew neither the cause of nor the cure for the disease that killed half the population.

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[1] Letter to the Honorable John Bell Williams, House of Representatives, July 24, 1957.

The story was altogether different in New York City a few years ago. When several visitors to the city died of smallpox, the entire population girded itself to head off an epidemic. Within a week almost 6,000,000 people had been vaccinated. The medical profession not only had the knowledge, it had the *resources* to enable it to avert an immense tragedy. Within the lifetime of thousands of doctors almost all contagious diseases have been brought under control. Modern technology has given the doctor weapons in the fight against disease that were undreamed of a century ago when the first thermometers came into use. Modern transportation, the use of out-patient clinics, and the wide-spread use of hospital facilities enable the doctor to care for many more patients than he could in horse-and-buggy days. Do the modern equivalents of the magic carpet, the miracle gadgets, and the miracle drugs mean that as time goes on we will need fewer doctors?

Medical opinion is divided on this question. There can be no doubt that under modern conditions the individual practitioner is vastly more efficient—and vastly more successful—than his counterpart of a century ago, who would be as ill equipped as any layman to practice medicine today. Dr. Allman says: "It is possible for a medical student to complete undergraduate medical education and even internship or residency training without having encountered some patients with diseases that were everyday experiences to the student of 30 years ago." [1]

Dr. Burney agrees: "Preventive methods have virtually eliminated three of the diseases which were widely prevalent in the United States at the turn of the century: typhoid fever, diphtheria, and malaria. In 1900, these diseases comprised the backbone of medical practice: today, physicians rarely see a case; yet the decline of these and other infections through prevention has been accompanied by ever-increasing demands for the physicians' services." [2]

As Dr. Allman points out, the changing dimensions of medical practice "have presented new problems and challenges to medicine and its allies as well as to other areas of activity." [3] Present-day doctors probably spend many more man hours treating children with the vaccines, serums, antibiotics, and the other drugs that not only cure them but keep them well than were once spent by doctors who could only sit helplessly by and watch them die. Each discovery requires an army of experts to develop it and put it to use. Once it took only one doctor to resign himself and the child's parents to the inevitable death of a "blue baby." It now takes a team of medical specialists and auxiliary personnel to correct the congenital abnormality of a baby's heart to insure the child a normal life span. According to Dr. Burney:

> At least fifteen persons, including four surgeons, were needed in the operating room for the repair of a congenital lesion of the heart at the Clinical Center of the Public Health Service. Over 100 medical specialists, nurses, and highly skilled technicians were involved in preparation for, and performance of, the operation, and in the post-surgical care of the patient. It is estimated that the capital investment in the surgical suite, with its basic instrumentation, and the special machinery for this particular operation totalled over $100,000.[4]

Millions of people who would once have died of the diseases of childhood that are now preventable or curable today live long enough to develop the degenerative diseases of age that require extensive medical care.

The median age of Americans has risen from 23 years in 1900 to 30 years in 1950. For the future, the percentage of senior citizens will continue to rise sharply. *The oldsters are the fastest growing percentage of the population.* The average life expectancy at birth of 70 years could be extended if further advances are made in medical knowledge. A breakthrough in cancer research could lengthen the lives of millions of people now alive who are expected to contract this killer disease.

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[1] Allman, *op cit.*, p. 24.

[2] Leroy Burney, "Physicians for Tomorrow," The Thirteenth Martin Memorial Lecture, American College of Surgeons, Chicago, Illinois, October 6, 1958, p. 3.

[3] Allman, *op cit.*, p. 24.

[4] Burney, *op. cit.*, p. 14.

Some medical experts believe that the more doctors we have the more we need: "The average American is making about twice as many visits to physicians per year as he made 25 or 30 years ago. The American population is being hospitalized at three times the rate of 1940." [1]

Medical knowledge is constantly expanding. No single doctor can digest more than a small fraction of the total medical knowledge we have accumulated in the last fifty years—more progress than in all of previous history. "The growing mass of knowledge that created the background for these developments has stimulated an increasing need for specialization. It also has highlighted the need for integration and cooperation between specialists and their respective skills, if effective realization of their total potential is to be achieved." [2]

LONGER TRAINING TIME–MORE SPECIALISTS

Half a century ago four years of medical school were enough to impart to the medical student all there was to learn about medicine. A year of internship was deemed sufficient to equip him with the necessary experience to apply his knowledge. Today the American Medical Association and the Advisory Board for Medical Specialists recognize and approve nineteen basic areas of specialization and an additional thirty-two sub-specialty areas of certification. Physicians qualifying for such specialty recognition must take from three to five years of education and training beyond the internship. As a result of the ever-increasing complexity of medical knowledge, the percentage of specialists is rising. In 1923, 11 per cent of all practicing doctors were full-time specialists, by 1955 nearly 40 per cent.[3]

Because it takes so long to educate them, doctors begin their careers much later than do members of other professions. Before 1917, out of every 1,000 doctors who were graduated from medical school, almost all were ready to take up active practice at the end of their fifth training year. Today, medical educators estimate that more than 80 per cent will elect to take three to five additional years of training beyond the internship before the various specialty boards will consider them qualified to practice as certified specialists. Although these boards have no legal status, they have great prestige and authority within the profession. Consequently, the number of self-declared specialists is declining, while the number of board-eligible and board-certified specialists is rising.

The protracted length of medical education, which is of concern to the profession, is largely unavoidable. The profession insists upon quality in education and itself has been responsible for ever-higher standards. The American Medical Association first came into being to improve medical practice and to eliminate quackery and charlatanism. Following the revelations of the famous Flexner report in 1910 which described the inadequate facilities and inadequate curricula and faculty of many medical schools, over 100 "diploma mills" were forced to close their doors. No one would wish to increase the number of doctors by lowering the quality of medical education. Competent doctors cannot be educated by "quickie" methods.

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[1] Burney, *op. cit.*, p. 6.

[2] Allman, *op. cit.*, p. 24.

[3] *Journal of the American Medical Association*, Internship and Residency Number, 1955, *passim*.

DIVERSION OF DOCTORS TO RESEARCH

While the hospital training period has doubled for nearly 80 per cent of every medical graduating class, the number of doctors who elect to go into research instead of into clinical practice has increased dramatically. Between 1949 and 1955, the total supply of physicians rose by 8 per cent. In the same period there was a 78 per cent increase in the number of doctors engaged in full-time research and/or teaching. While 2.3 per cent of the graduating class of 1935 went into research or teaching, 6.0 per cent of the class of 1945 did so. This ratio is expected to rise to 8 per cent for the 1953-1965 classes. Since the physician-population ratio has remained nearly stable for 40 years, the attraction of research may mean that a smaller proportion of every graduating class will be available for clinical practice. Many new research opportunities have been created in recent years, and it is impossible to predict when the rate of increase will diminish or stop. By 1975 several thousand more M.D.'s will be needed than can be expected from present sources if the research activities on which medical progress depends are to be expanded over and above what is necessary to keep the clinical ratio at present levels.[1]

SHORTAGES IN KEY MEDICAL SERVICE AREAS

Although in certain areas the country is well supplied with doctors, shortages exist in some service categories. The Staff Report to the Committee on Interstate and Foreign Commerce of the House of Representatives reports that estimates in 1957, for example, indicated that 6,700 more psychiatrists are needed for public mental hospitals. In the past decade several hundred vacancies in state and county mental hospitals have gone unfilled. State and local health departments also report several hundred vacancies. Many local health departments are below the minimum standard of one public health physician per 50,000 population. In 1956, the United States Public Health Service reported over one hundred vacant budgeted positions for doctors, while more than several hundred vacancies existed in the Veterans Administration. One hundred and

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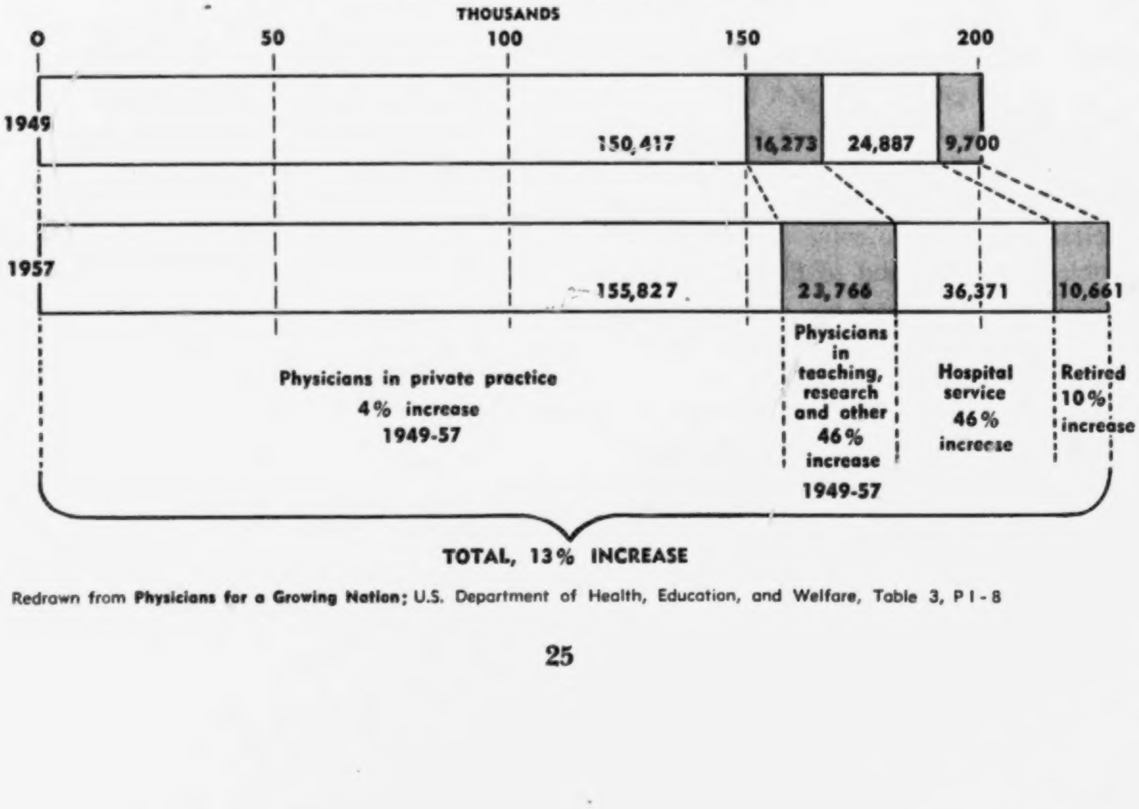
[1] Unpublished Appendix, Bayne-Jones, *passim.*

FIGURE 4
Diversion of Doctors to Research



Redrawn from **Physicians for a Growing Nation**; U.S. Department of Health, Education, and Welfare, Table 3, P I - 8 ten million people live in areas where the doctor-to-people ratio is below the national average. For the academic year 1955-1956, medical schools reported 251 unfilled faculty positions, and for 1957, 619.[1] There is indication of increasing need for medical school faculty.

COMPETITION FOR AVAILABLE DOCTORS

In those areas of short supply, competition for the services of available doctors is keen. State mental hospitals complain that they cannot fill their staff positions because they are unable to match the salaries offered by the Veterans Administration. Rural communities offer scholarships to medical students in exchange for their promises of a number of years of medical practice. Some states have liberalized their licensing laws to attract doctors from other areas. Industry also competes for the services of available doctors. Twenty years ago the pharmaceutical industry employed about 65 M.D.'s. It now uses over 600. The number of physicians engaged in industrial medicine has risen sharply. In addition, a substantial number of doctors are drafted by the military services.

A few doctors have maintained—their ranks grow thinner as the manpower crisis worsens—that there is no doctor shortage. Laymen point to the difficulties of getting a doctor during emergencies in a strange city. The AMA has stated that many small towns are finding it difficult to replace their one doctor who has died. From any broad view, national or state, the measures that separate interests may take to solve their medical shortage problems are doomed to failure. If the physician-population ratio does not improve, the doctors added to one medical service must necessarily be subtracted from another.[2]

Medical authorities disagree as to whether hospital internship and residencies represent true shortage categories. Twenty-five per cent of all approved vacancies go unfilled. Dr. Burney commented on the need for these hospital doctors:

> The utilization of hospitals has become the preferred way of delivering or receiving medical care. . . . It would seem obvious that junior hospital staffs of the residency and internship levels are now and will become increasingly essential elements of modern medical care. The services required by senior physicians and surgeons for their hospitalized patients cannot be provided in most urban hospitals unless there are adequate junior house staffs. It is equally obvious that the United States is not producing enough physicians to fill existing junior staff positions in a large proportion of our hospitals.[3]

However, at no time have more than 15 per cent of all hospitals had approved internship and residency programs. Medical educators look upon such programs as filling an *educational* rather than a service need. They believe, therefore, that unfilled internships and residencies do not always represent real shortages. Dr. Kenneth Williamson, Director of the Washington Service Bureau of the American Hospital Association, testified:

> All internships and residencies are not of equal merit in terms of educational value, but they are a vital part of graduate medical education and should not be construed as service . . . unfilled intern and resident positions [are] not a measure of the shortage of practicing physicians, rather they demonstrate an excess of acceptable educational opportunities.[4]

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[1] *Medical School Inquiry*, a staff report to the Committee on Interstate and Foreign Commerce, House of Representatives, 85th Congress, 1st Session (1957), *passim*. Cited hereafter as *Medical School Inquiry*. For original sources see pp. 285-309.

[2] *The AMA News*, Vol. 1 (Nov. 3, 1958), (n.p.). See also *Medical School Inquiry*, pp. 288-299.

[3] Burney, *op. cit.*, p. 8.

[4] *Medical School Inquiry*, p. 258.

DOCTORS WORK LONG HOURS

While a few doctors insist we do not have too few physicians, nobody maintains that we have too many. Those that we have, work on the average, longer hours than is the custom in other occupations. In 1950, for instance, of 61,176 salaried doctors 58 per cent reported that they worked 49 or more hours a week, 45 per cent said they worked 60 hours or more, 28 per cent averaged over 70 hours. Among 111,578 self-employed M.D.'s, 75.8 per cent reported weekly working hours of 49 or more, 61 per cent worked 60 hours or more, and 36 per cent worked 70 hours or more.[1] Dr. Burney says that "The drain on the time and energy of the physicians is felt not only by them, but also by their patients."[2] Herbert R. Mayes, in the 75th Anniversary issue of the *Journal of the American Medical Association,* observes: ". . . doctors have given the people a greater life span, more time for themselves. What do the people, the consumers of medicine, want now? They want more of the doctors' time! It is their one, their only, to all intents and purposes, their exclusive, important complaint: 'Doctors are too busy. We are no sooner ushered into their offices than we are ushered out; we'd like to talk more, to tell them more; we'd like them to explain more, to listen more.' " Doctors are more effective than they were 50 years ago, but many of them are badly overworked.

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[1] Department of Health, Education and Welfare, *Health Manpower Source Book* (1950), *Section 5, Industry and Occupation Data,* See Table 1, p. 24.

[2] Burney, *op. cit.,* p. 6.

TABLE 1
HOURS WORKED DURING THE CENSUS WEEK BY WESTERN PHYSICIANS AND SURGEONS WITH KNOWN HOURS

State	Total with Known Hours		Per cent 49 hours or more		Per cent 60 hours or more		Per cent 70 hours or more	
	Salaried	Self. *	Salaried	Self.	Salaried	Self.	Salaried	Self.
Arizona	267	538	47.6	74.5	37.4	61.7	20.9	39.9
California	5,311	10,131	52.1	68.0	39.9	50.5	21.0	26.5
Colorado	661	1,108	51.9	76.8	38.8	63.1	22.0	38.0
Idaho	91	353	58.2	81.6	47.2	67.9	29.6	45.6
Montana	162	361	58.0	72.6	44.4	61.4	29.6	42.6
Nevada	39	152	43.6	74.3	33.3	59.8	23.0	48.6
New Mexico	196	311	48.5	78.5	39.7	67.5	22.4	47.2
Oregon	548	1,134	54.9	73.8	41.6	58.7	26.0	33.4
Utah	244	497	66.0	81.5	54.9	68.4	35.6	47.4
Washington	851	1,694	56.8	71.0	43.3	56.6	27.1	33.1
Wyoming	59	166	52.5	78.9	37.2	59.2	23.7	53.0
West	8,429	16,445	53.6	75.6	41.6	62.2	25.5	41.0
United States	61,176	111,578	58.0	75.8	44.8	60.7	28.6	36.7

* Self—Self-employed.

Source: *Health Manpower Source Book,* Section 5: *Industry and Occupation Data,* 1950; U.S. Department of Health, Education & Welfare.

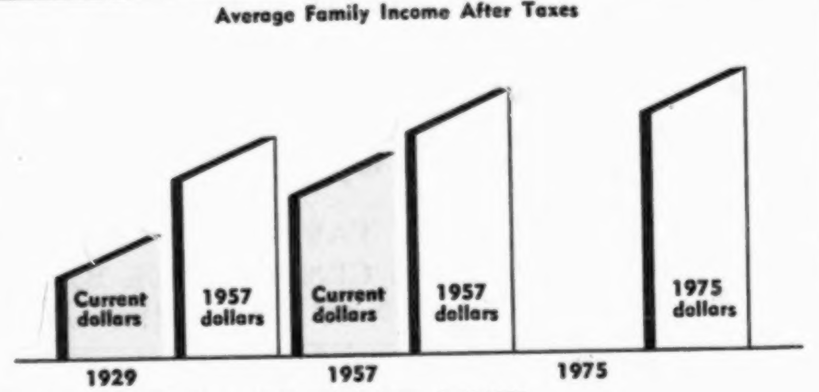
MORE PEOPLE WANT MORE MEDICAL CARE

At the same time, the effective demand for medical service keeps increasing. Personal consumption expenditures for medical service jumped from 2.8 billion dollars in 1929 to 10.1 billion dollars in 1955. Part of this increase reflects population growth and higher prices, but part reflects an actual rise in medical spending. Americans use a larger share of the family budget for health care than they used to in the past.

In 1928-1931, white persons averaged 2.6 doctor visits a year. By 1957 the average number of visits was 4.8. The percentage of those who saw a doctor during the year rose from 48 to 63 per cent. The amount of money spent for medical care in a year rises in direct relation to income.[1]

There are several factors that account for increased demand for medical service beside the enormous strides in medical science. The first of these is the growth of urban population centers; city people demand more medical service than rural people. The demand for medical care also increases with educational level, and with public awareness of developments in medical science and the need for good health. The spreading of prepaid medical plans is further increasing the use of medical service. Moreover, "the vast reservoir of silent suffering" has lowered because of other safeguards—pension plans, community and other services—that protect people against unattended illness. The fourth factor that increases the demand for medical care is the rising proportion of extremes of the age groups, the young and the old, in the population. Both these age groups require more medical care than do other segments of the population. The increasing percentage of women of child-bearing age who have children also contributes to the greater demand for doctors' services. A large proportion of pregnant women now obtain medical care throughout their pregnancy.

FIGURE 5



Source: 1929, 1957—Survey of Current Business, April 1958, 1975—Committee for Economic Development, Economic Growth in the U.S., Feb. 1958.

If all these factors are taken into account, the gross ratio of 133 doctors for every 100,000 people is an incomplete picture of medical manpower. This gross ratio includes retired doctors, interns and residents, those engaged in teaching, research, and others who are not available for clinical practice. Although the ratio has remained relatively stable for forty years, it does not reflect the changing percentages among the various categories of medical service. For instance, the total number of general practitioners has increased, but their percentage of the total medical manpower pool has declined. In 1931, 85 per cent of all doctors were in general practice; in 1957, about 50 per cent. The ratio does not reveal that more special demands are made on the total doctor pool. The number of doctors left over for general practice when these demands are filled may not be sufficient to meet the increasing public demand for patient care. Nor does the over-all ratio indicate that some areas are relatively well supplied with doctors while others are under-supplied.

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[1] *Progress in Health Services*, Health Information Foundation, Vol. 7 (December 1958).

FOREIGN DOCTORS HAVE KEPT RATIO FROM FALLING

How have we managed to keep the physician-population ratio stable? By attracting ever larger numbers of foreign doctors. The number of foreign doctors licensed increased from 417 in 1947 to 1,158 in 1956, an increase of 177 per cent. The number of foreign doctors licensed in 1956 is equivalent to the graduating classes of twelve medical schools of 100 students each. In addition, 2,293 of 8,780 available internships in 1956 were filled by immigrant and visiting doctors, while 5,580 of the 21,213 approved residencies for that year were filled by foreign doctors. Licensure of interns and residents is not required in most states. The increase in the number of approved and available internships and residencies is largely due to rising hospital standards. The desire of hospitals for approval and accreditation has created a vacuum into which foreign doctors have been drawn. Between 1950 and 1955 the number of Americans serving in approved hospital positions decreased by one per cent. During the same period the number of hospital positions filled by foreign doctors increased by 280 per cent. In 1950, 730 hospitals used alien doctors; 912 hospitals did in 1956. In some states 50 to 70 per cent of hospital staffs are composed of aliens.[1]

PREPARATION OF FOREIGN DOCTORS CONCERNS MEDICAL EDUCATORS

That we have come to rely so heavily on foreign doctors disturbs many medical educators. For example, Dr. Willard C. Rappleye, former dean of Columbia University Medical School, stated:

> At the present time [1956] over 25 per cent of the house staffs in the hospitals of the United States are aliens. The percentage in a few states is over 50 per cent. It has been reported recently that between 5,000 and

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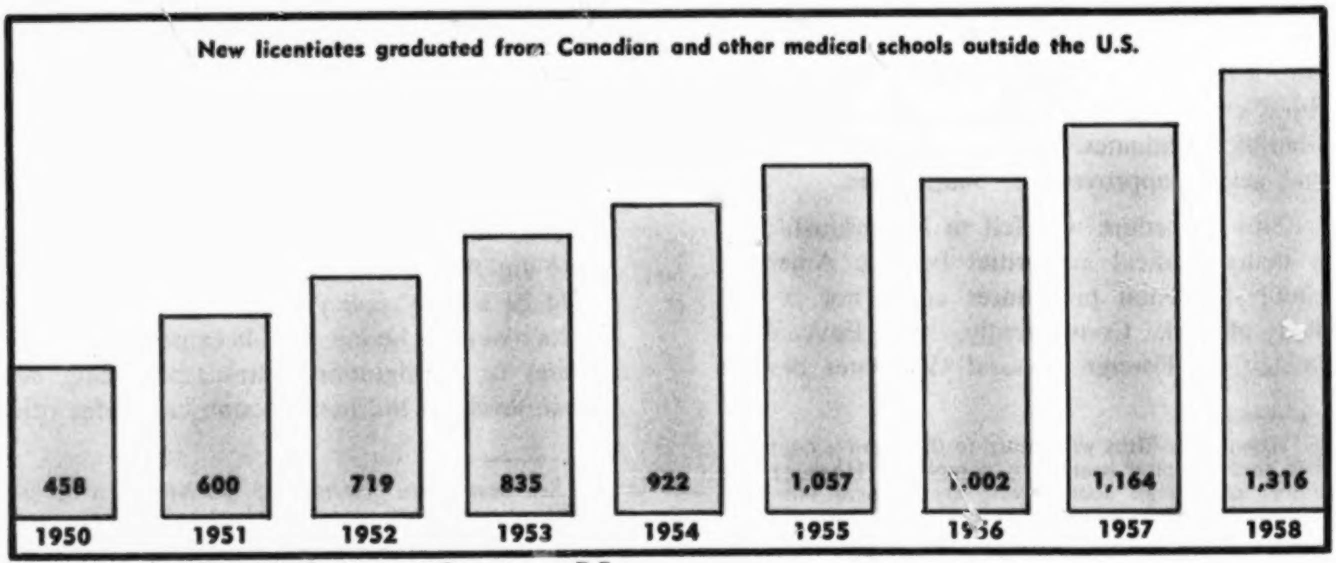
[1] *Medical School Inquiry*, p. 27. See also James E. McCormack and Arthur Feraru. "Alien Interns and Residents in the United States", *Journal of American Medical Association*, Vol. 161, (May 26, 1956), p. 323. See also annual licensure numbers, *Journal of the American Medical Association.*

FIGURE 6



Source: Surgeon General's Preliminary Report, p. I-5

> 6,000 foreign-trained physicians will enter the country this year, compared with a total of 6,977 graduates of all the American medical schools.[1] Most of the foreigners will be graduates of unapproved medical schools. In many sections of the country there are now two classes of citizens as far as medical services are concerned: those who are to be cared for by physicians who have had a satisfactory preparation for medical practice, and those whose medical care will be provided for by physicians who are graduates of substandard schools.[2]

Some foreign doctors are comparable to the best products of American schools but to the extent that inadequately trained foreign doctors fill the shortages our medical schools cannot presently make up, our failure to expand training facilities contributes to a deterioration of medical care standards. Pressures to relax licensing requirements are already strong in some states where physician-population ratios are low.

In an effort to cut down on the licensing of unqualified foreign doctors, the Council on Medical Education and Hospitals of the American Medical Association, together with the Association of American Medical Colleges, compiled in 1950 a list of some fifty foreign medical schools whose graduates were considered comparable to American graduates. Foreign schools not listed were neither approved nor unapproved.

This procedure was felt to be unsatisfactory by many medical authorities because American school inspection procedures could not be applied abroad. Consequently, the Educational Council for Foreign Medical Graduates devised methods for evaluating foreign doctors on an individual basis. It is composed of representatives of the American Medical Association, the Federation of State Medical Examining Boards, the American Hospital Association, and the Association of American Medical Colleges. The Council has elaborated certain minimal requirements for graduates of foreign medical schools comparable to those expected of American graduates, to aid hospital and state licensing boards to assess the qualifications of foreign applicants for internship, residencies, and licensure.[3]

Considering the low physician-population ratios in many foreign countries some wonder why we are not exporting doctors rather than importing them. Dr. Burney points out that:

> As President Eisenhower's plan for international health matures, as the World Health Organization and individual countries expand their activities in research and application, there will be fewer foreign graduates to spare for work in the United States. Our country is already hard put to compete with Russia in finding qualified physicians who speak the local language to help developing countries build their medical care programs and public health services. The Russians can afford to export their brand of medicine and public health on a much more liberal basis than we in the United States have been able to do up to now. This handicap is another indication of our urgent need.[4]

Indefinite importation of foreign doctors to make up for shortages of American manpower could be a risky policy. If the supply of foreign doctors were to be cut off—because of war, emigration or immigration restrictions, rising economic levels in the home countries, or for other reasons—we would suffer a critical shortage of doctors.

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[1] About four-fifths will return to their native countries when their hospital training is completed. However, the number of foreign doctors who are licensed has been steadily increasing year by year.

[2] Medical Education on the Move," *Report of the Dean of the Faculty of Medicine of Columbia University*, 1956, quoted in *Medical School Inquiry*, p. 265.

[3] See descriptive brochure of the American Medical Qualification Examination published by Educational Council for Foreign Medical Graduates, 1710 Orrington Avenue, Evanston, Illinois.

[4] Burney, *op. cit.*, p. 9.

AMERICANS WANT GOOD MEDICAL CARE

A realistic appraisal of manpower needs should take into account the amount and kind of service necessary for maintaining American standards of health. We do not have enough information on the relationship between demand and need. Doctors Vernon Lippard and John W. Cline, for instance, cite an "area of the United States in which there were a million people and no pediatrician, obstetrician, or psychiatrist. Infant and maternal mortality were at a level several times the national average. The local doctors were busy but meeting the demand. They were, however, obviously not meeting the need. Hospitals were built and 40 full-time physicians brought in to staff them. They soon became busy. Thus, when the service was made available, the demand increased and more nearly approached the need." [1]

Until we have more detailed information on "the difference between the amount of medical care (demanded and received) and the actual need for service to restore and maintain optimal health, we have no choice but to base our planning on existing ratios. . . . Although the physician-population ratio may not be the best measure for future planning for medical care, it does constitute the best measure which can be brought to bear on the problem at this time." [2]

More money is available to buy needed medical services, and more demands are made on existing manpower. The ever-increasing numbers of doctors needed in administrative, teaching, and research jobs, the increasing health consciousness of the nation, the needs of government services, and industry are taxing our manpower resources.

TABLE 2

NUMBER AND PROPORTION OF PERSONS COVERED BY HOSPITAL, SURGICAL, AND MEDICAL INSURANCE: 1940-1957

	Hospital		Surgical		Medical	
Year	Persons protected (thousands)	Per cent of population	Persons protected (thousands)	Per cent of population	Persons protected (thousands)	Per cent of population
1940	12,312	9	5,350	4	3,000	2
1950	76,961	51	54,477	36	31,589	14
1957	121,432	72	108,931	65	71,813	43

Source: Health Insurance Council. Increasing Protection for the American Public. Voluntary Health Insurance in the U.S. as of Dec. 31, 1957.

A Survey of Accident and Health Coverage in the U.S. as of Dec. 31, 1950.

***Physicians for a Growing America*, Report of the Surgeon General's Consultant Group on Medical Education. U.S. Department of Health, Education and Welfare, 1959, P.I.-20.**

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[1] John W. Cline, Vernon W. Lippard, *Population Characteristics and Trends, Proceedings*, 54th Annual Congress on Medical Education and Licensure, 1958.

[2] *Ibid*, p. 53.

NATIONAL RATIO A MINIMUM STANDARD

The gross ratio of 133 per 100,000 on which physician projections are made is a "hold the line" figure. Maintaining the existing ratio will not improve our medical service problems. At best, it will only prevent them from worsening. In the early '30's voices began warning that we faced a physician shortage. If, twenty years ago, we had heeded the warnings, the manpower situation would not now be alarming. In 1948, *The Nation's Health, a Ten Year Program, A Report to the President* based its findings on a projection of 175,000,000 people in 1975. We have more than 175,000,000 people now.

NEED FOR MORE DOCTORS TO MAINTAIN PRESENT RATIO

Many experts say we need to graduate about 2,000 more doctors a year. Some of this increase can be provided by expanding existing medical schools. However, the most we can expect from that source, according to Dr. Burney, "is an additional 220 American graduates per year in the five-year period 1960-1965, in contrast with the 1,900 annual increase recommended by the Secretary's consultants."[1]

The Association of American Medical Colleges stated: "Many schools already have expanded their enrollments without increase or improvement of physical plant." Testimony before a House Committee on health research facilities brought out that if federal funds for construction were to become available to medical schools, much of it would need to be used for rehabilitation and renovation of inadequate facilities rather than for expansion. Dr. Robert Berson, Dean of the Medical College of the University of Alabama and co-author of *Medical Education in Mid-Century*, testified:

> It is my own opinion from observations of other schools a few years back in a survey that there really are a great many schools in this country *which desperately need to improve facilities to maintain the quality of education now going on: and that very few schools should contemplate any expansion unless there is real expansion and improvement of the facilities that they now have.*[2]

NEED FOR EXPANSION AND NEW SCHOOLS

The medical schools we build now will not add doctors to the population much before 1968. By 1975 we will have 45,000,000 to 65,000,000 more people. According to the Bayne-Jones report, the country will need to graduate an additional 1,900 doctors annually to take care of increased population needs.

By expanding facilities some of this increase can be provided by existing schools. But not all of it; new schools must be built.

In 1958, the Bayne-Jones report recommended:

> A minimum of 14 and as many as 20 new medical schools will have to be built if the existing number of physicians per 100,000 population is not to fall. To meet this need construction would have to begin in the immediate future and be completed within a few years.[3]

NEED FOR SOUND PLANNING

In the past "medical schools gradually developed as there seemed to be a need for them." In the words of The American Medical Association:

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[1] Burney, *op. cit.*, p. 14.

[2] Health Research Facilities, *Hearings Before a Subcommittee on Interstate and Foreign Commerce*, House of Representatives, 85th Congress, 2nd Session (April, 1958, p. 104. Italics added.

[3] Bayne-Jones, *op. cit.*, p. 2.

Dean Vernon Lippard of the Yale School of Medicine has placed this estimate even higher. He estimates that to meet the needs of the 1975 population we must build 25 new medical schools.

> As the population of states augmented and more physicians appear to be desirable, state legislators have authorized the universities to develop medical schools. Private philanthropies played a role of tremendous importance in making it possible for privately owned and supported universities to develop medical schools. The question now confronting the nation is whether or not through continuation of the same manner of growth, adequate new educational facilities can be developed to meet needs that in themselves are not clearly defined.[1]

At this late date it is clear that haphazard planning is not the answer to our medical manpower problems. Had such planning ever been adequate the problems we face in securing enough medical manpower for the future would not be as great as they are.

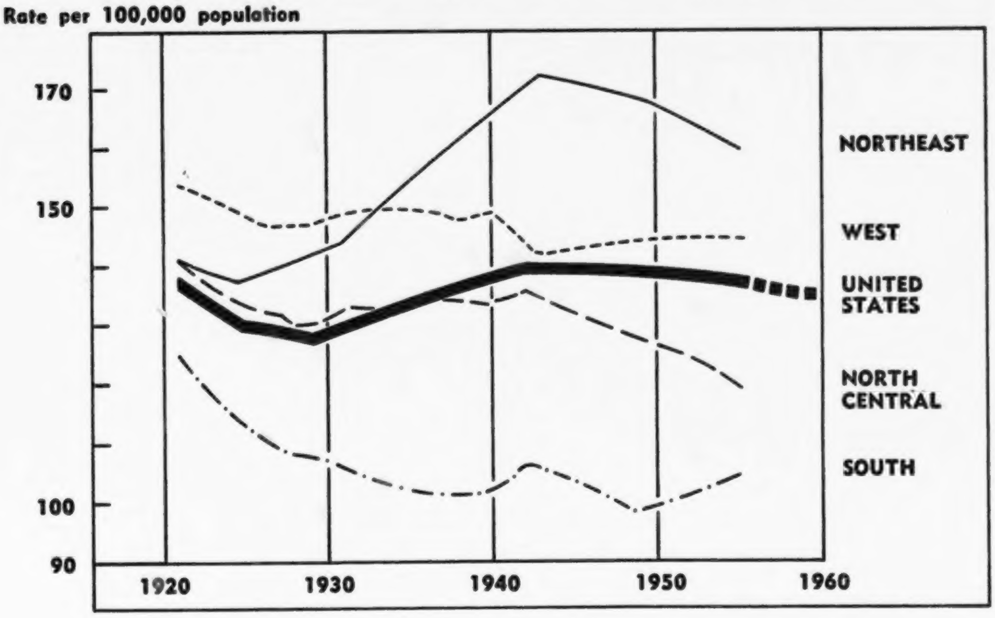
The American Association of Medical Colleges says:

> Medical education should be expanded further without impairment in the high quality which has been carefully built up in the United States since 1910. It is possible that some existing schools can, with new facilities and larger faculties, accept new students, but the need will not be met completely in this manner. The larger contribution in numbers of students will come, as it has in the past, by the establishment of new schools.[2]

It would be risky to allow the present doctor-to-people ratio to fall below present levels. The sheer fact of an expected increase of 45 to 65 million Americans means that the nation must move promptly to educate more doctors for tomorrow's needs.

FIGURE 7

Trend in Regional Distribution of Physicians



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[1] *Journal of Medical Education*, Vol. 32, (Jan., 1957). pp. 47-48.

[2] *Ibid.*, pp. 47-48.

CHAPTER II

Does the West Need More Doctors?

In this study, we are concerned primarily with the medical manpower needs and the medical education requirements of the Western states. Compared to other regions, much of the West is short of medical manpower. Ten of the thirteen western states are below the national physician-population ratio. We wish to emphasize that our estimates of future medical manpower needs in the West are conservative. They are predicated on present minimal standards. No medical authority has said that any region has too many doctors, even when it has twice as many physicians per 100,000 as some western states have.

In the world of arithmetical averages the West appears to have more doctors than the country as a whole—141 per 100,000 as compared with a national 133. It cannot be repeated too often, however, that any average for the West may present a distorted picture. No arithmetical leveling can faithfully record this land of sharp contrasts. The West has both the wettest and the driest states in the union. Parts of Alaska are within the Arctic Circle, while part of Arizona is a land of perpetual summer. In the West are both deserts and rain forests, ranges barely good for grazing, and lush farmland. There is heavy industry in some states and in others virtually none. Some places in the West have fewer people per square mile than anywhere else in the country; but one of its states, California, is expected to pass New York in population within the next decade.

WEST MEDICALLY UNDERMANNED

If, on the average, the West has more doctors than the rest of the country, in reality almost half the population of the region is not well situated when it needs a doctor. Alaska has 52 doctors for every 100,000 people, and most of her physicians are clustered in cities that are connected only by water, air, or dog team; New Mexico, with a ratio of 79 doctors per 100,000 people, has one of the lowest averages in the country. Wyoming with 86, Idaho with 93, Montana with 98, Nevada with 101, and Arizona with 104 doctors for every 100,000 people are considerably below the national ratio. The western ratio is above the national ratio only because of California and Colorado. Ten of the thirteen western states are below both the Western and the national average.

Estimates of the number of doctors the West will need by 1975 cannot be precise because they depend upon population projections which can be invalidated by catastrophes, by unpredictable developments, or by good fortune. Estimates of the number of blacksmiths the country needed ten years before the development of the automobile would have been considerably higher than those made ten years after it was put into production. The baby boom confounded the demographers. The continuing high level prosperity which helps to keep the baby boom going confounds the economists.

Population projections for individual states are even more uncertain than national projections. State populations are markedly affected by interstate migration patterns which depend on various factors that cannot be predicted—new industrial plants, severe or prolonged drought, local booster spirit, tax preference for businesses. At present, the potential populations of Arizona, New Mexico, and Nevada appear to be limited by their available water. The development of cheap nuclear energy or economical methods for converting sea water could alter the picture overnight. Who would venture to predict the rate of population expansion in the southwest if these technological developments should occur?

THE POPULATION EXPLOSION IN THE WEST

Population growth is of much greater magnitude in the West than in the country as a whole. The West is growing almost three times as fast as the rest of the country, a trend that will probably continue and even accelerate. While the rest of the country gained seven per cent between 1950 and 1955, the West's population jumped by 18½ per cent. In this five-year period the West gained 3,415,000 people, or enough to start a new city the size of Seattle each year. By 1975, the twelve western states may have 40,000,000 people, about 70 per cent more than in 1955. *As many people will live in California alone as now inhabit the entire region.*

That is, they will if present population trends continue. And, at present, there is no reason to suppose that they will not. Westerners have babies at the same rate as people in other parts of the country, but most of the addition to the Western population since World War II is due to the millions of Americans of both sexes who have taken Horace Greeley's advice.

BIG CITIES GROW FASTER

Most of the newcomers have shunned the wide-open spaces and have gone to the West's big cities. Surprising as it may seem, a larger percentage of westerners live in and around urban centers than is the case for the rest of the country, and in the last 50 years the westward movement has been largely a big-city movement. Standard metropolitan areas in the West have about 65 per cent of the total population. In Arizona and New Mexico, three metropolitan areas are absorbing two-thirds of the annual population increase in the southwest, and almost half the population of the southwest lives in and around Phoenix, Tucson, and Albuquerque.

Those states that are now sparsely populated will, however, still be relatively uncrowded. Much of the wide-open space will still be wide-open in 1975. Counties without a city of 10,000 are growing more slowly than counties with such cities. If current trends continue, the three big cities of the southwest will be 2½ times as large by 1975 as they are now and will have three-fifths of the total population of the area.

In the five states that comprise the Rocky Mountain region, four big-city areas—Denver, Ogden, Pueblo, and Salt Lake City—show half the population increase of the entire Rocky Mountain area. These cities are growing three times as fast as rural counties which, in turn, are growing faster than counties without a central city of 10,000. Although four-fifths of the population increase in Idaho, Montana, and Wyoming will take place in rural areas—these states have no big cities—their populations will still be predominantly rural in 1975. About forty per cent of the popu-

FIGURE 8

COMPARISON OF PHYSICIAN/POPULATION RATIO
FOR THE WEST, 1949, 1955, 1957

	1949	1955	1957
ALASKA		52	49
ARIZONA	110	104	95
CALIF.	139	159	157
COLORADO	175	154	143
HAWAII		98	
IDAHO	85	93	88
MONTANA	99	98	95
NEVADA	125	101	96
NEW MEXICO	80	79	78
OREGON	121	126	121
UTAH	124	131	120
WASH.	114	126	120
WYOMING	89	86	81

WEST 141

U. S. 135

Source:

1949 Ratio taken from **Health Manpower Sourcebook,** Sec. 1.: Physicians, May, 1952, U. S. Department Health, Education, Welfare, P.H.S. No. 511.

1955 Ratio taken from **Health Manpower Sourcebook,** Sec. 1.: Physicians, May, 1957, U. S. Department Health, Education, Welfare, P.H.S. No. 511.

1957 ratio calculated directly from data contained in 1958 **Directory,** American Medical Association

lation of the Rocky Mountain states will live in or around Denver, Ogden, Pueblo, and Salt Lake City in 1975 and almost half the population of the northwest will live in or around metropolitan areas. There will be 1,635,000 more people in Oregon and Washington than there were in 1955.

California is the colossus of the West. It has 13 of the 32 western standard metropolitan areas. In 1975 it will have well over half the total population of the West. Its big cities will have close to nine million more people than now live in New York City. Only 3.3 per cent of Californians will live in counties without a city of 10,000. California is big, but by 1975 it will be a lot bigger.

RATES OF GROWTH DIFFER IN WESTERN STATES

The rate of population increase varies greatly among the WICHE states, and any planning must take this fact into account. Western states grow at different rates. The fastest growing states in the Union are Arizona and Nevada, both of which may nearly triple by 1975. California will increase by about 80 per cent. New Mexico will grow at almost the same pace as California, while Oregon and Washington will increase by about 40 per cent. The Rocky Mountain states will increase by about 48 per cent, from 21 per cent for Montana to 63 per cent for Utah. The Rocky Mountain region has been ahead of the rest of the country in population growth but the greatest gains have been in Colorado and Utah; Idaho, Montana, and Wyoming have lagged behind the national average.[1] Eight of the Western states have fewer than a million people; while California had approximately 13,032,000 in 1955, her neighbor, Nevada, had only 225,000. When we speak of "the population of the West" it is well to remember that California alone has over half the present total population of the region, while California, Oregon, and Washington together have two-thirds. These projected state population increases assume that at some point the birth rate will drop to the 1945 level and that the rate at which death is postponed will slow down. The birth rate, however, has not yet stabilized at the 1945 level. Any breakthrough in medical science — say in heart disease or cancer — would cause the mortality rate to drop sharply.

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[1] Estimated increases are based on Stanford Research Institute projections for the Western states. Census Bureau projections are somewhat lower.

THE WEST WILL NEED MORE DOCTORS

If, as expected, the population approaches 40,000,000 by 1975 there will be about 16,500,000 more people than there were in 1955 needing medical services. Of these, 10,000,000 will be in California. In Arizona and New Mexico 1,977,000 more will be needing medical care. An additional 1,860,000 people will be wanting physicians in the Rocky Mountain area, and in Oregon and Washington nearly 2,000,000 more.

To maintain her 1955 physician-population ratio California alone will need 16,600 more doctors—3,200 more than all the Western medical schools will graduate between 1955 and 1975, assuming that present plans for expansion are carried out. The West as a whole will need about 22,615 more doctors—nearly 9,200 more than the total western graduations between 1955 and 1975—if the 1955 ratio of the region is not to decline.[1] While it can be assumed that a large percentage of the region's doctors will continue to come from outside the West, will the migration of doctors keep pace with the migration of the general population?[2] Unfortunately, in Dr. Burney's words, "We have no current data on the mobility of physicians."

The extent of our medical manpower problem is concealed if we fail to consider the number of doctors who will have died or retired by 1975. The replacement problem is of large magnitude; not only must the West find more doctors to keep up with its growing population, but we must also figure on replacing those doctors who will no longer be available. More than a fifth of all doctors now practicing in the West are over 55 years of age. Western states with low physician-population ratios have a higher percentage of doctors in the age bracket 55 and over than do states with relatively high ratios.

PEOPLE-TO-DOCTOR RATIO DECLINING

At present the West is not keeping up with its replacement needs. By importing nearly 1~~7~~4,000 doctors between 1947 and 1956, California managed to maintain the 1949 ratio of 159 per 100,000. But this ratio represents a considerable drop from a 1940 ratio of 172 per 100,000. Without a large number of foreign doctors, moreover, California's ratio would have declined during the ten year period 1947-1956. In 1956, California imported more foreign than native doctors. Colorado's physician-population ratio dropped from 175 per 100,000 in 1949 to 154 in 1955, a decrease in the ratio of 12.0 per cent.

Sparsely settled areas are steadily losing ground in the struggle to keep their physician-population ratios from falling. In 1940, Nevada had a ratio of 151 per 100,000. By 1949 the ratio had dropped to 125, and in 1955 it fell to 101 per 100,000. The story is similar in New Mexico, Montana, and Wyoming. However, it should be remembered that because of improved transportation, medical care in rural areas is often more adequate for an area's needs than simple doctor-to-people ratios indicate. In many instances, rural medical service areas adjoin major medical service regions.

But the percentage of doctors in the age bracket 55 and over is much higher in rural than in urban areas. Sparsely populated areas will experience increasing difficulty in attracting doctors in the years ahead. Doctors are free to settle where their own preferences take them, and, like the great majority of Americans, they prefer urban areas. It is understandable that doctors should want to practice where they can be in contact with new medical developments and where they can enjoy the cultural advantages of large cities.

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[1] This increase is calculated from the present base number. It does not take account of replacements made necessary by death, retirement, or out-migration. See Table 3, p. 38.

[2] The 1958 *Directory of the American Medical Association* indicates that the number of doctors per 100,000 population has dropped in every Western state.

TABLE 3

PROJECTION OF DOCTORS NEEDED IN WEST IN 1975

State	No. of Doctors		Phys./Population Ratio per 100,000			Total Drs. Needed to Keep State 1955 P/P Ratios 1975	Total Add'l Drs. Needed 1955-1975	Per Cent Increase 1955-1975
	1955	1957	1949	1955	1957**			
1	2		3			4	5	6
Arizona	1018	1075	110	104	95	2392	1374	135
*California	20763	21803	159	159	157	37365	16602	80
*Colorado	2385	2390	175	154	143	3234	849	40
Idaho	568	564	85	93	88	744	176	31
Montana	621	629	99	98	95	784	163	26
Nevada	228	255	125	101	96	606	378	168
New Mexico	632	647	80	79	78	1106	474	75
Oregon	2098	2142	121	126	121	2898	800	38
Utah	1026	1026	124	131	120	1572	546	53
Washington	3238	3269	114	126	120	4410	1172	36
Wyoming	263	256	89	86	81	344	81	31
WEST	32840	34056	141	142	137	55455	22615	69
Northeast				160				
United States	218061		135	133				
Alaska		101		52	49			
Hawaii		574		98	~~48~~			

Total Drs. Needed in West to Keep Nat'l P/P Ratio 1975	Total Add'l Drs. Needed 1955-1975	Per Cent Increase 1955-1975	Total Drs. Needed in West to Keep 1955 NE Ratio-1975	Total Add'l Drs. Needed 1955-1975	Per Cent Increase 1955-1975	State
7	8	9	10	11	12	13
3059	2041	200	3680	2662	261	Arizona
31255	10492	51	37600	16837	81	California
2793	408	17	3360	975	41	Colorado
1064	496	87	1280	712	125	Idaho
1064	443	71	1280	659	106	Montana
798	570	250	960	732	321	Nevada
1862	1230	195	2240	1608	254	New Mexico
3059	961	46	3680	1582	75	Oregon
1596	570	56	1920	894	87	Utah
4655	1417	44	5600	2362	73	Washington
532	269	102	640	377	143	Wyoming
51737	18897	58	62240	29400	90	WEST

SOURCES: Federal Security Agency, *Health Manpower Source Book, Section 1: Physicians,* May 1950. United States Department of Health, Education, and Welfare, Public Health Service Publication Number 511, *Health Manpower Chart Book,* 1952.

*Both California and Colorado are above the national ratio; therefore, totals for national ratios are lower than for maintaining existing Western ratio. However, ten of the twelve Western states are *below* the national ratio.

**1957 ratios calculated directly from data contained in 1958 *Directory of American Medical Association.*

TABLE 4

POPULATION AND INCOME IN RELATION TO MEDICAL SCHOOLS

STATE	DATE FIRST MEDICAL SCHOOL (1)	POP. WHEN FIRST MED. SCHOOL FOUNDED (2)	ESTIMATED POP.—1955 (3)	ESTIMATED POP.—1975 (4)	ESTIMATED % POP. INCREASE 1955-1975 (5)	PER CAPITA INCOME 1955 (6)	PER CAPITA INCOME 1957 (7)
Alaska			209,000			$2,072	
Arizona			993,000	2,327,000	134.3	1,577	$1,750
California	1864	379,994	12,554,000	23,565,000	87.7	2,271	2,523
Colorado	1883	194,327	1,456,000	2,071,000	42.2	1,764	1,996
Hawaii (Civilian Population)			481,000	744,000	54.0	1,720	
Idaho			615,000	780,000	26.8	1,462	1,630
Montana			628,000	767,000	22.1	1,844	1,896
Nevada			218,000	563,000	158.3	2,434	2,423
New Mexico			781,000	1,425,000	82.4	1,430	1,686
Oregon	1887	317,704	1,639,000	2,344,000	43.0	1,834	1,914
Utah	1905	276,749	757,000	1,231,000	62.6	1,553	1,694
Washington*	1945	2,206,000	2,540,000	3,530,000	39.0	1,987	2,128
Wyoming			312,000	418,000	34.0	1,753	2,038
				Total West	73.5	2,052	2,276
				Total Cont. United States	36.3	1,844	2,035

*Population figures are for census years closest to date first medical school was founded except for Washington where estimated figure is from Stanford Research Institute estimates.

SOURCES: Col. 1—Assn. of American Medical Colleges, *Admission Requirements of American Medical Colleges, 1957.*
Col. 2—U.S. Bureau of the Census, *Statistical Abstract,* 1957.
Col. 3—Stanford Research Institute, *Population Trends in the United States Through 1975,* 1955.
Cols. 6-7—Compendium of State Government Finances, 1958 (Washington, U.S. Gov't Printing Office).

At the same time, those segments of the population that require the services of specialists are increasing faster in the West than in the country at large. While persons aged 65 and over will increase by 41 per cent in the United States as a whole, the increase will be 80 per cent in the West. Persons aged 20-24—the age group that most needs obstetrical service—will increase about 67 per cent in the country at large but 109 per cent in the West. Similarly, the school age population will jump 43 per cent in the country but 92 per cent in the West.[1]

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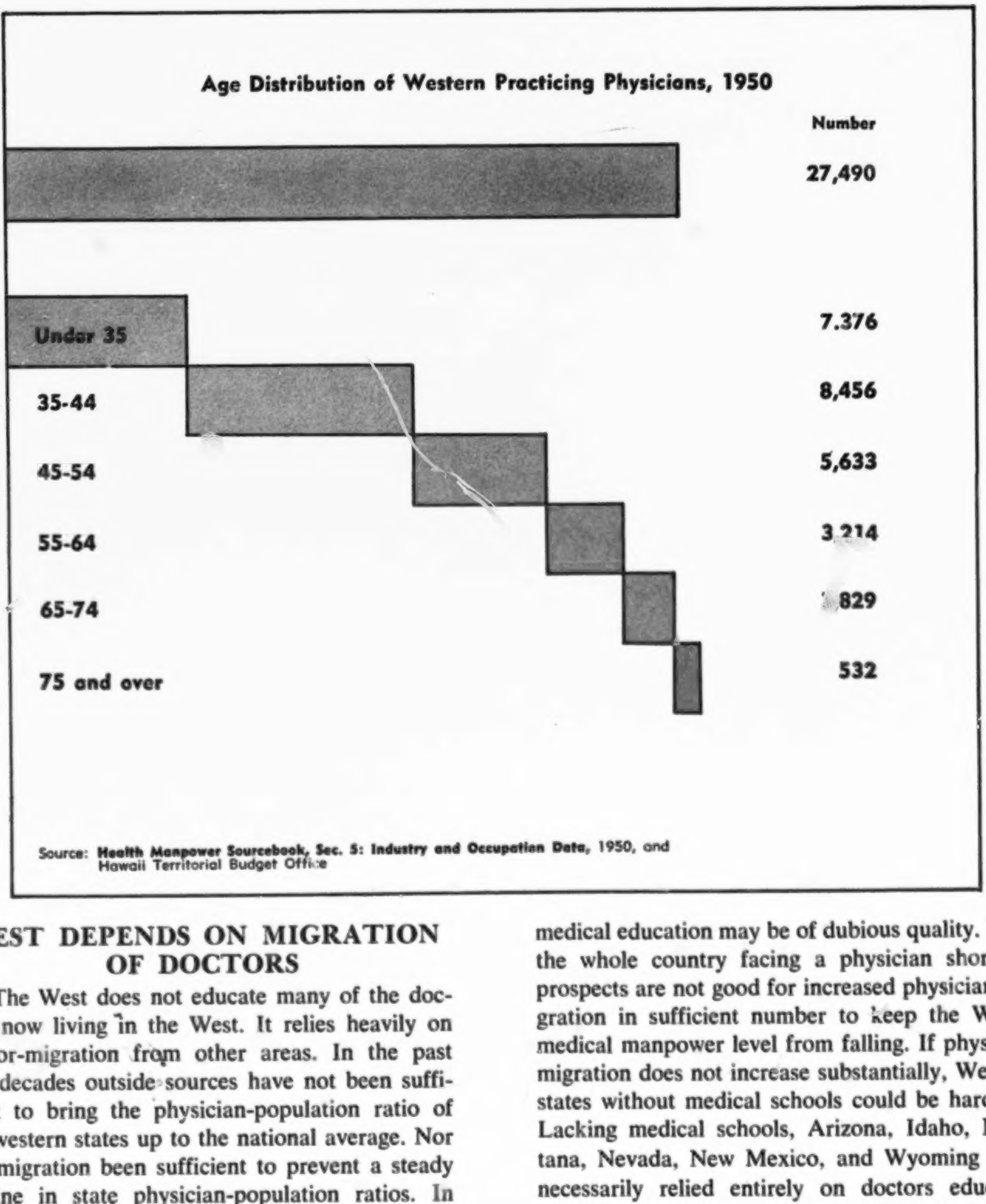
[1] See Stanford Research Institute, *Population Trends in the United States Through 1975* (Menlo Park, Calif.: Stanford Research Institute), *passim.*

FIGURE 9



Source: **Health Manpower Sourcebook, Sec. 5: Industry and Occupation Data,** 1950, and Hawaii Territorial Budget Office

WEST DEPENDS ON MIGRATION OF DOCTORS

The West does not educate many of the doctors now living in the West. It relies heavily on doctor-migration from other areas. In the past two decades outside sources have not been sufficient to bring the physician-population ratio of ten western states up to the national average. Nor has migration been sufficient to prevent a steady decline in state physician-population ratios. In some states an increasing percentage of migrant doctors, moreover, are aliens, some of whose medical education may be of dubious quality. With the whole country facing a physician shortage, prospects are not good for increased physician migration in sufficient number to keep the West's medical manpower level from falling. If physician migration does not increase substantially, Western states without medical schools could be hard hit. Lacking medical schools, Arizona, Idaho, Montana, Nevada, New Mexico, and Wyoming have necessarily relied entirely on doctors educated outside their borders. These estimates, based on *present* state ratios, assume only minimal standards. If we were to set our sights higher, the situation would appear discouraging.[1] New Mexico, for instance, ranks forty-fourth in the country. Alaska is far below Mississippi, the forty-eighth. Projecting needs on existing conditions alone appears to understate future needs, as can be seen by comparing Utah with New Mexico. By 1975 New Mexico will have about 1,500,000 people, while Utah will have about 1,300,000. Yet, if we are to project existing ratios, Utah, the state with the fewer number of people, will need about 1,500 doctors while New Mexico with more people will need only 1,100. Arizona, which will have almost 300,000 more people than Colorado in 1975, will need approximately 2,400 doctors, while Colorado will need 3,200—assuming that each state needs no more and no less than its existing ratio. The question is whether the need of states with rapid population growth and urbanization can continue to be met without improvement of existing ratios.

WEST NEEDS ADDITIONAL MEDICAL FACILITIES

Each Western state must decide for itself what it wants and needs and is willing to pay for in the light of its total educational requirements. But if the West is to meet its mounting medical manpower crisis it must move immediately to educate more doctors. It can do this only by expanding the facilities of existing medical schools and by building new ones. If, as the Bayne-Jones report indicates, the country needs to increase its annual output of doctors to a number equivalent to the graduating classes of twenty average-sized medical schools, then it would seem reasonable, on the basis of expected population, that four to six new schools should be located in the West.

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[1] For comparisons see Table 3, Col. 3, p. 38, which gives estimated future needs based on present Western state ratios, the national ratio, and the northeast ratio.

CHAPTER III

The Opportunity to Study Medicine

Although the country needs a great many more doctors, qualified students who want to study medicine will soon have a harder time getting into medical school than at any time since the end of World War II. This problem is intensified by residence restrictions imposed upon the publicly owned medical schools: the restrictions limit choice by both students and schools. According to the American Medical Association, the attrition of students due to poor scholarship is significantly higher in publicly owned schools than in private schools, and this difference is due, "at least in part . . . to the prevalence of geographic restrictions as to the residence of students which [limits] the population from which publicly supported schools [draw] their first year medical students.[1]"

APPLICATIONS WILL INCREASE

In 1960 the first of the "baby boom" generation will reach college age. College enrollments will double and possibly even triple in the next decade. Although the percentage of college graduates who will want to study medicine will decline slightly, the actual number of medical applicants will rise sharply; we will have a slightly smaller percentage of a much larger population. The estimated number of applicants to medical schools in 1965 ranges from about 22,000 to nearly 34,000. If it is 22,000 the increase will be about 46 per cent; if 34,000, it will be 126 per cent. We will have the candidates but not the training places. For lack of medical schools we may waste brainpower resources that the medical profession will urgently need.

TABLE 5

Projected Number of Applicants to Medical Schools, 1960-1965

Year	Maximum	Medium	Minimum
1960	24,189	16,626	15,681
1961	24,412	16,779	15,825
1962	25,970	17,850	16,835
1963	28,048	19,278	18,182
1964	31,683	21,777	20,539
1965	33,687	23,154	21,837

Source: *Medical School Inquiry*, p. 212. Based on data from *Journal of Medical Education*, Vol. 28, (July, 1953), pp. 493-494.

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[1] *Journal of the American Medical Association*, Vol. 168, (November 15, 1958), p. 1511.

It would be impossible to estimate the number of potentially qualified college graduates electing other careers who might have considered a career in medicine were the opportunity to study medicine less restricted because of residence requirements and other handicaps having little to do with ability.

MEDICINE MUST COMPETE WITH OTHER PROFESSIONS

Despite the expected increase in the number of applicants, the medical profession nevertheless may have to embark on a vigorous recruiting program if it is to compete successfully with other professions for the best available students. Graduation from medical school is such a long, arduous, costly process that many college students are turning to other fields. The decision to prepare for medical training cannot be put off; it must be made in the early years of college. There are now many more professions competing for available manpower which confer prestige, intellectual satisfaction, and monetary reward. Medicine is steadily losing ground in the competition for qualified students. From 1920 to 1955 the percentage of the college age population enrolled in institutions of higher education increased from 4.6 to 18.2 per cent. But during the same period the number of college students who went on to study medicine dropped from 2.4 to 1.0 per cent of those going into graduate or professional fields. A further decline of .6 per cent is expected by 1965. Yet the number of college students is expected to rise from 2,755,000 in 1955 to 6,443,000 in 1970. Thus, even this .6 per cent will represent a much larger number of applicants than there are training places for.

MANY AMERICANS GO ABROAD FOR TRAINING

Since 1910, after the diploma mills closed their doors, it has sometimes been difficult to get into a medical school in the United States. In 1939 there were about 500 Americans studying medicine abroad. In 1956-1957 there were from 2,000 to 2,500—equivalent to the training capacity of four to five American medical schools.[1] The American Medical Association reports that for every foreign student receiving his undergraduate medical education in the United States, there are seven American students undertaking medical studies outside of the United States and Canada.[2]

In the opinion of Dr. Walter S. Wiggins, Associate Secretary, Council on Medical Education and Hospitals, American Medical Association, "There is a basis for considering that many, if not most, United States students now studying abroad were not considered qualified for such study in United States schools." [3]

However, as we have seen, residence requirements are the greatest obstacles to admission to American medical schools. At one time Americans studied abroad because of the renown of the European schools. Today, many go abroad because of the lack of opportunity to study on native ground.

From 1934 through the war years, less than half of those wanting to study medicine succeeded in getting into medical schools. Immediately after the war, less than one-third of those wanting to study medicine succeeded in getting into medical school. The sharp rise in applicants was due largely to the "bunching" of returning soldiers whose education had been interrupted by the war. This situation was temporary. The ratio is presently one acceptance for every two applicants. The rise in applicants expected by 1962 is expected to parallel the post-war rate. Moreover, this increase will probably continue because of the rise in population.

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[1] Excluding Canada, which supplies the equivalent of one American school.

[2] *Journal of the American Medical Association,* Vol. 168 (Nov. 15, 1958), p. 1549.

[3] Quoted in *Medical School Inquiry,* p. 13. It is expected that the examination set up by the Educational Council for Foreign Medical Graduates will provide a sound basis for screening American graduates of foreign medical schools. No detailed studies have been made of rejected applicants, but it is known that at least some Americans studying in foreign schools were not considered qualified for acceptance by American schools.

PRESENT APPLICANT-ACCEPTANCE RATIO WILL RISE

If current projections of applicants to medical schools are reliable, we will have, as already noted, between 22,000 and 34,000 qualified applicants a year by 1965. This large an applicant pool should enable medical schools to select additional qualified students to meet the increasing needs of the nation for more doctors—if we have the training places.

According to Dr. Wiggins: "There was a period shortly following the last World War when our own medical schools could not accept all qualified applicants. Many of these, rather than give up a career in medicine, chose instead to study in other countries where admission to medical schools was possible." [1] A situation similar to that following the War is almost upon us. The potential doctors we need will have to be turned away by the medical schools if their present capacity is not increased.

INCREASES IN MEDICAL TRAINING PLACES

Since 1950, seven new medical schools have been built, of which three are private and four public (including the University of Kentucky, due to open in 1959). In addition, three of the six schools of basic science have been expanded to four-year medical schools. The number of graduations rose from 5,533 in 1949-1950 to 6,845 in 1955-1956. The Association of American Medical Colleges believes that some of the expansion in existing schools was created without expanding facilities or faculties, thereby endangering the quality of medical education. No new medical school is now in the planning stage. Between 1930 and 1956, ten medical schools increased their freshman places by 30 or more. But at the same time, nine schools decreased their freshman places by 30 or more. In 1957, 82 medical schools told the staff of the Interstate and Foreign Commerce Committee of the House of Representatives that they could expand their facilities by ten per cent or more if federal aid legislation then pending was approved.[2]

HALF OF ALL MEDICAL APPLICANTS COME FROM SEVEN STATES

In 1955, almost half of all the applications to United States medical schools came from seven states — New York, Pennsylvania, California, Illinois, Ohio, Texas, and New Jersey. These states, excluding New Jersey, had 42 per cent of the total enrollment in the nation. Almost 38 per cent of all approved medical schools are located within their borders. For every 100,000 population in the United States there were 8.7 applicants to medical schools. The Northeast accounted for 11.3 per 100,000, the North central for 7.6, the South for 8.0 and the West for 7.4.[3]

RESIDENCE RESTRICTIONS

In 1955, 78 American freshmen were enrolled in Canadian schools while five Canadian students were enrolled in American schools. "The United States," said the Staff Report to the 85th Congress, "in reality is the recipient of a favorable balance that represents an educational opportunity equivalent to another American school." The Staff Report points out that in 1955, eleven state-owned schools limited enrollment to state residents. "It is perhaps pertinent that other residents of these same states, equal in number to 44 per cent of the first-year enrollment of these eleven schools, were accepted in medical schools outside their own states. Legislative bodies could well consider the effect that adoption by all medical schools of similarly complete restrictive admission policies would have on the number of their own residents who would be able to acquire a medical education." [4]

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[1] *Ibid.*

[2] *Medical School Inquiry*, p. 244. See also hearings before the Subcommittee of the Committee on Interstate and Foreign Commerce, April 21, 22, 23, 29, 1958, pp. 139-141.

[3] *Ibid.*, p. 224.

[4] *Ibid.*, p. 227.

All state-owned schools except Vermont either restrict admission to state residents entirely or give residents preference. Only about 30 per cent of all medical school places go to out-of-state students. Of the 85 schools, only 23 have an "open" admission policy in the sense that they accept 50 per cent or more out-of-state students. Of the private schools, fourteen give preference to residents of their own states.[1] Because medical schools are having an increasingly hard time in making ends meet, private schools are turning to their state governments for aid. When aid is forthcoming, the price is residence restrictions. In Pennsylvania, where all six schools are privately owned, the state pays $2,000 for each Pennsylvania student. The University of Miami receives $3,000 for each Florida student enrolled *if* 90 per cent of the freshman class are Florida residents. Since 1950, New York State has taken over two private schools and imposed residence restrictions. Between 1954 and 1957, out-of-state enrollments dropped from 15.07 per cent to 9 per cent in the public schools and from 57.29 per cent to 52 per cent in the private schools.[2]

OTHER RESTRICTIONS

The opportunity to study medicine is not equal for equally qualified candidates. Besides residence, there are other restrictions which limit opportunity. Some southern schools will not accept Negro students, two schools will not accept women, denominational schools prefer members of their own faiths, and one school will not take men.

MEDICAL EDUCATION IS EXPENSIVE

The opportunity to study medicine is further limited by an attribute that has nothing to do with competence and which prevents many qualified students even from considering a medical career—lack of money.

The financial burden of a medical education effectively closes off the possibility of a medical career to many potential students whose families are in the lower and middle income groups. Because of the nature of medical education, it is not possible for the student to work his way through school completely, although one-fourth of all students have jobs outside the university. Medical schools frown on the practice of part-time work, but most permit it. They must. About one-third of medical students in 1952-1953 came from lower income groups and about one-third of all students expect to incur debts ranging from $3,500 to $10,000. About a third of all medical students are married, and two-thirds of their wives are working. Three-quarters of all medical students report loans or gifts averaging $1,000 a year from parents. For the families of aspiring doctors the incubation period is long and terribly costly.[3]

Limited financial aid in the form of cash prizes, scholarships, and loans is available at most schools. Students are generally advised to have sufficient funds to carry them through the first two years of training. A system of long-term loans would make it possible for otherwise qualified but needy students to elect a medical career.

Medical education is one of the most expensive forms of graduate or professional training. The huge cost of running medical schools recently prompted a medical school administrator to remark: "There is only one thing worse for a state than not to have a medical school and that is to have one."

SCHOOL OPERATING COSTS HIGH

Because the schools do not have a uniform cost-accounting system, precise statements of the operating costs of medical schools are impossible to obtain. But there can be no doubt that the costs are high and getting higher. Less than twenty per cent of the yearly income of most medical schools comes from tuition. The remainder comes from other public and private sources. In spite of the great cost of operating medical schools we actually spend a very small amount of our total health expenditures on educating doctors. During 1955 we spent $15.5 billion, of which less than one per cent was used to educate physicians.[1]

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[1] *Ibid.*, p. 241.

[2] Data compiled from annual education numbers, *Journal of the American Medical Association.*

[3] For discussion of financing of medical students see *Journal of Medical Education,* Vol. 29, (Feb., 1954).

STATES WITHOUT MEDICAL SCHOOLS AT A DISADVANTAGE

States without medical schools have fewer applicants per 100,000 population than states with medical schools, and a smaller percentage of their applicants are accepted. All states without medical schools except Rhode Island have low physician-population ratios. Because one-half of all doctors practice in the states in which they received their medical training, states without schools lose the services of many potential physicians.

The Association of American Medical Colleges says:

> A program of expansion will require large sums of money, both for capital expenditure and for operating expense. The Association of American Medical Colleges is dedicated to the preservation of joint and coordinated support of medical education from private and Government sources and believes the American people are willing and able to back ventures which will mean better health and happier life.[2]

Not everyone who wants to be a doctor should be able to get into a medical school. But there should be enough medical schools to educate the doctors we need. No matter how many applicants there are, the medical schools should be able to choose the best. The son of a Montana miner should have the same opportunity to study medicine as the son of a Los Angeles doctor—if he is equally qualified. That qualified students should be unable to study medicine for reasons of geography, race, religion, sex, or lack of money is contrary to the best traditions of American education. Construction to meet our needs—either by expansion or by building new schools—will be very expensive. But if the nation is to meet its needs, *not* expanding could turn out to be even more expensive. The nation has no choice if it is to preserve American standards of medical care.

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[1] *Medical School Inquiry*, p. 39.

[2] *Journal of Medical Education*, Vol. 32, (January, 1957). See Appendix C, p. 100.

CHAPTER IV

The Westerner's Opportunity to Study Medicine

In 1955-1956, nine of the ten states in the nation without medical schools had fewer than the national average of 8.7 applicants per 100,000 population. Seven of these states are in the West, which trails the rest of the country in the number of medical applicants for every 100,000 people. The Northeast leads with 11.3, the South follows with 8.0, the North Central states have 7.6, and the West 7.4. As indicated by the following figures, Western states without medical schools have fewer medical applicants than the region as a whole: Arizona 4.1, Idaho 6.9, Montana 6.2, Nevada 3.1, New Mexico 3.4, and Wyoming 6.9.

FEWER FRESHMEN FROM THE WEST

In 1955-1956, the nine states without medical schools had fewer freshman medical students for every 100,000 population than did the country as a whole, which had 4.6.[1] In the West, Nevada trailed with 0.9, New Mexico had 1.5, Arizona 2.2, Idaho 3.6, Montana 3.8, and Wyoming 4.3.[2] In some of the Western states the total number of applicants and acceptances involved is so small that these ratios can be misleading, for a very small change can drastically alter the ratio. In Nevada, for instance, the total number of applicants was ten in 1952 and eight in 1953. But the number of acceptances dropped from four to one, thereby affecting the ratio considerably. Such a small change in the total numbers would have had no effect at all on California's ratio. States without medical schools, however, tend to have low physician-population ratios, fewer applicants, and fewer acceptances in relation to population.[3]

TRAINING CAPACITY

The number of medical schools a state has does not necessarily mean that its training capacity in relation to its population is high. New York State, for instance, with ten medical schools, had in 1956-57 six freshman places for every 100,000 population, while Vermont, with one school, had fourteen. One-third of these places in New York and two-thirds in Vermont were filled by out-of-state students. Except for Wyoming, not one Western state without a medical school had a single student in any of the New York schools or at Vermont. All Western states with medical schools, however, had students in these eastern schools, a fact that may indicate that a medical school in a state must act as a magnet in drawing residents toward a medical career.

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[1] Excluding Alaska, which was not yet a state.

[2] Data are not available for Alaska.

[3] Other factors can also be of great importance beside the lack of a medical school. Mississippi has the lowest physician ratio in the country (excluding Alaska) and the highest percentage of doctors over 60 years of age. But since it converted its two-year medical school to a four-year school, and embarked on a generous student loan program the number of its medical applicants has risen to 10.8—one of the highest ratios in the South—and its ratio of students is now 5.4—better than the national average.

California is worse off than New York in its number of training places. With a population expected to pass that of New York by 1975, it has less than half New York's training places. With five medical schools, California has room for fewer than three freshmen for every 100,000 people. Relative to their populations, other Western states with medical schools have higher ratios than California, which also lags behind the national average in the number of applicants per 100,000 people—7.4 in 1955-1956, and in the ratio of freshmen per 100,000 population—3.0.

The West with 14 per cent of the national population trains only nine per cent of the doctors and sends only 11 per cent of all medical freshmen to school. Western states without medical schools have 17 per cent of the population of the region but supply only 11 per cent of all Western medical students.

HIDDEN ATTRITION

The region as a whole has a somewhat lower applicant-acceptance ratio than the country. That is, a slightly smaller percentage of western applicants than for the country at large is accepted in all medical schools. The applicant-acceptance ratios of western states without medical schools may be misleading because of the small numbers involved. The applicant-acceptance ratio obscures the fact that in these states the greatest loss may be *potential* medical students. The hidden attrition rate, which occurs before applications are filled out, cannot be calculated.

MANY STUDENTS LEAVE REGION FOR TRAINING

The applicant-acceptance ratio does not indicate the chances that western states without medical schools have of getting their students home after graduation. His home state and the state in which he took his medical training act as attractions on a new M.D. when he decides where to practice. All western states without medical schools send more than half of their students outside the West for medical training. In 1956-1957, Arizona sent 61 per cent of her medical students outside the West; Idaho, 57 per cent; Montana, 75 per cent; Nevada, 76 per cent; New Mexico, 50 per cent; and Wyoming, 59 per cent.

In contrast, California trains 63 per cent of its medical students at home; Colorado, 80 per cent; Oregon, 89 per cent; Utah, 79 per cent; and Washington, 73 per cent. Although the western states without schools have low physician-population ratios, they can expect a smaller percentage of their students to return than can states that provide for medical training. Few students from western states with publicly supported medical schools attend other schools in the region. If they do not enroll in their home state, they generally leave the region for training.[1]

WESTERN COLLEGE ENROLLMENTS WILL RISE

The West will soon have twice as many college-age individuals relative to its population as the rest of the country. Educational levels in the West are high, and the probability is that the percentage of westerners who will go on to college will at least match the percentage in the country. If, as is possible, western college enrollments triple in the next decade, western colleges will have as many students enrolled as were enrolled in the whole country in 1940.

NUMBER OF MEDICAL APPLICANTS TO INCREASE

The number of Western students who will want to study medicine is certain to be much greater within the next five years. But their prospects for getting into medical school will be poorer as the number of applicants rises nationally and as residence restrictions tighten. The number of out-of-state places has been falling for the past decade, and within a few years, western candidates may be all but frozen out of nonwestern medical schools. Faced with doctor shortages, such an outcome could be serious for the West. In the past, the national decline in the number of medical school applicants has worked to the advantage of the western states. This advantage may be almost gone. The number of applicants nationally is expected to reach at least the 1950-1951 level within the next five years, and it may go higher. Medical school admission policies will be fixed largely by state legislators under considerable pressure to save all available places for state residents.

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[1] See annual education numbers, *Journal of the American Medical Association.*

TABLE 6

TOTAL NUMBER OF APPLICANTS TO MEDICAL SCHOOLS IN THE UNITED STATES

Year	Number of Individual Applicants
1948-1949	24,242
1949-1950	24,434
1950-1951	22,279
1951-1952	19,920
1952-1953	16,763
1953-1954	14,678
1954-1955	14,538
1955-1956	14,937
1956-1957	15,917
1957-1958	15,791

Source: *Journal of the American Medical Association*, Vol. 168 (Nov. 16, 1958), p. 1505.

EFFECT OF RESTRICTIVE ADMISSIONS POLICIES

The effect of closing the doors to out-of-state students can be seen by comparing Colorado and the College of Medical Evangelists with other western schools which leave their doors slightly open. Except for WICHE exchange students, Colorado has not accepted out-of-state applications, no matter how good individual applicants may look to the admissions committee. The College of Medical Evangelists gives preference to Seventh Day Adventists.

In 1957-1958, the Colorado Medical School had an applicant-acceptance ratio of 2.5 and the College of Medical Evangelists received 1.9. In 1957-1958, on the other hand, the ratio for California at Los Angeles, was 11.5; for California at San Francisco, 5.2. Oregon had a ratio of 6.2, Southern California had 9.9, Stanford 9.2, Utah 6.1, and Washington 6.5. In 1958, in order to attract high quality students, the Regents of the University of Colorado authorized the medical faculty to admit a small number of exceptional out-of-state students. The bulk of acceptances in most western schools, however, will continue to be state residents. Restrictive admissions policies reduce the talent pool from which the school may choose.

WICHE MEDICAL EXCHANGE PROGRAM

That Western states are concerned with providing medical education for able students can be seen from the creation of the Western Interstate Compact for Higher Education, which is designed to stimulate interstate cooperation in professional training. To this end, a regional student exchange program was set up in 1953 which enables member states without schools of dentistry, medicine, or veterinary medicine to furnish its qualified students with opportunities for professional training. Since its inception, 524 students from six states have been admitted to Western medical schools under the provisions of the medical exchange program operated by WICHE. From 25 students in 1953, the number has risen to 125 in 1959.

All nine western schools participate in the WICHE program, and all the western states belong to the Western Regional Compact. Applicants from member states without medical schools may apply to any WICHE school. If they are accepted the sending state pays the medical school $2,000 a year for each student, considerably less than the actual cost. The student pays the resident tuition. Receiving states reserve a number of places each year for WICHE students, the number of places reserved depending on circumstances.

Not every western state has taken full advantage of the provisions of the medical exchange program. In certain instances, states failed to appropriate sufficient funds to cover costs for students who had, under the terms of the Compact, applied and been accepted by schools. Greater use can be made of the exchange program for the next few years than has been done in the past.

TABLE 7

STUDENTS IN THE MEDICAL EXCHANGE PROGRAM BY YEAR

Sending States	1953	1954	1955	1956	1957	1958	1959
Alaska				4	3	6	8
Arizona	2	10	12	21	26	32	45
Idaho							12
Montana	1	2	3	4	4	4	4
New Mexico	17	21	21	30	32	36	41
Wyoming	5	21	23	23	20	16	15
TOTALS—524	25	54	59	82	85	94	125

But if, in the next few years, the number of applicants rises significantly, it is anybody's guess as to how many places the receiving states will be able to set aside for WICHE students. The number of out-of-state openings is small and may decrease further. Although the exchange program helps to adjust for the shortage of facilities, it cannot in itself create new space.

TABLE 8

WICHE STUDENTS IN WESTERN MEDICAL SCHOOLS BY YEAR

School	1953	1954	1955	1956	1957	1958	1959
California (S.F.)					1	2	3
California (L.A.)					1	3	4
Colorado	25	51	55	66	63	58	62
Medical Evang.				2	3	3	3
Oregon		1	1	6	4	4	11
Stanford					1	3	6
Southern Calif.						4	7
Utah		2	3	7	9	13	20
Washington				1	3	4	9
TOTALS	25	54	59	82	85	94	125

TABLE 9

RATIOS OF APPLICANTS TO ACCEPTED FRESHMEN IN MEDICAL SCHOOLS

	1951			1952			1953			1954			1955			1956			1957		
MEDICAL SCHOOLS	A	F	A:F	A	F	A:F	A	F	A:F	A	F	A:F	A	F	A:F	A	F	A:F	A	F	A:F
* California—L. A.	285	28	10.2	484	32	15.1	409	32	12.8	381	50	7.6	460	50	9.2	563	50	11.3	586	50	11.7
* California—S. F.	450	72	6.2	464	77	6.0	415	76	5.5	390	77	5.1	503	78	6.4	533	78	6.8	411	79	5.2
* Colorado	206	80	2.6	177	77	2.3	170	82	2.1	193	85	2.3	205	86	2.4	243	84	2.9	217	85	2.6
Medical Evangelists	319	97	3.3	307	96	3.2	203	96	2.1	187	97	1.9	160	96	1.7	202	97	2.1	184	95	1.9
* Oregon	350	76	4.6	323	75	4.3	301	73	4.1	335	72	4.7	303	77	3.9	384	75	5.1	479	77	6.2
Southern California	685	69	9.9	631	69	9.1	477	69	6.9	458	69	6.6	595	69	8.6	676	68	9.9	647	65	10.0
Stanford	737	62	11.9	554	62	8.9	503	62	8.1	453	60	7.6	483	58	8.3	511	62	8.2	513	62	8.3
* Utah	498	55	9.0	400	55	7.3	385	55	7.0	283	55	5.1	227	55	4.1	309	54	5.7	315	55	5.7
* Washington	387	75	5.2	327	75	4.4	275	75	3.7	350	75	4.7	377	75	5.0	452	75	6.0	486	75	6.5
STATES (Includes only applicants to United States and Canadian Medical Schools)																					
Arizona	72	28	2.6	53	26	2.0	57	36	1.6	55	32	1.7	40	22	1.8	67	47	1.4	64	34	1.9
California	1215	336	3.6	1084	351	3.1	901	365	2.5	891	466	1.9	968	442	2.2	1024	436	2.3	1040	454	2.3
Colorado	180	80	2.2	157	79	2.0	139	82	1.7	147	79	1.9	151	83	1.8	166	82	2.0	155	82	1.9
Idaho	62	20	3.1	54	25	2.2	46	31	1.5	43	30	1.4	42	22	1.9	46	25	1.8	54	23	2.3
Montana	70	28	2.5	52	24	2.2	53	27	2.0	42	19	2.2	39	24	1.6	48	22	2.2	59	24	2.5
Nevada	17	4	4.2	6	4	1.5	8	1	8.0	4	1	4.0	7	5	1.4	13	6	2.2	12	3	4.0
New Mexico	35	22	1.6	25	15	1.7	35	13	2.7	37	19	1.9	27	12	2.2	35	20	1.8	33	18	1.8
Oregon	161	75	2.1	143	76	1.9	126	82	1.5	123	68	1.8	114	75	1.5	125	72	1.7	155	84	1.8
Utah	143	64	2.2	115	60	1.9	104	58	1.8	127	66	1.9	102	56	1.8	101	61	1.7	117	61	1.9
Washington	304	121	2.5	252	107	2.4	196	114	1.7	183	109	1.7	207	108	1.9	208	112	1.9	168	90	1.9
Wyoming	21	7	3.0	29	16	1.8	26	13	2.0	24	12	2.0	21	13	1.6	37	17	2.2	34	16	2.1

* Data furnished by Medical Schools. All other data was obtained from the Journal of Medical Education or the American Medical Association Journal. Discrepancies among sources were resolved in favor of greatest consistency.

LEGEND: A—Number of applicants
F—Size of freshman class, excluding students repeating the freshman year.
A:F—Applicant: Acceptance Ratio

MORE TRAINING PLACES NEEDED

For anyone who wants to be a doctor, it may be a handicap to be a westerner. Assuming he is otherwise qualified, residence is perhaps the greatest obstacle in the path of an aspiring M.D., for he cannot become a doctor unless he first gets into medical school, and year by year the number of out-of-state medical training places keeps shrinking as more schools impose residence restrictions. Would-be students from Alaska, Arizona, Idaho, Montana, Nevada, New Mexico, Wyoming, and Hawaii, who want to be doctors can spend many anxious hours throughout their college careers wondering: "Will I make it?" The age group from which medical students are drawn is growing almost twice as fast in the West as in the nation. The competition of more students for fewer places will be keener among westerners than among residents of any other section of the country. If, as expected, the number of medical applicants rises sharply, students from states without medical schools will be severely handicapped, and most of them will be westerners.

The WICHE exchange program can improve the prospects of students from states without schools only as long as the receiving states can reserve the places. There is only one permanent solution to this educational problem: new training opportunities must be created.

CHAPTER V

What the West Can Do

Clearly, the development of adequate medical manpower to meet the needs of our growing population is a national problem. The West has a large stake in all possible solutions to the problem. We have seen that demographers expect the population of the West to reach nearly 40,000,000 by 1975. And the factors that make for greater demand for medical services—population, urbanization, education levels, medical care plans, among others—apply with special force to the West. What can the West do to meet its medical manpower needs? There is no easy answer.

MORE EFFECTIVE USE OF MEDICAL FACILITIES

Many medical experts believe that present clinical resources and facilities could be used with greater effectiveness. Dr. John Bowers, Dean of the University of Wisconsin Medical School, wrote that new techniques in medical practice "should permit more effective application of medical care thereby decreasing the number of physicians required to give good medical care to any population group." While such developments would be desirable, the extent to which they cut down on the need for more doctors must be appraised by the medical profession itself. It is not possible, with our present knowledge, to evaluate the effect of new medical practice techniques and the whole complex of socio-economic change on national physician requirements.

ATTRACTIVE HOSPITAL TRAINING PROGRAMS

There is some evidence for believing that the place a doctor takes his hospital training helps to determine where he will practice. Therefore, it would be to the advantage of the West to encourage hospital programs for training interns and residents. Good hospital training programs will attract qualified medical school graduates. A well-defined hospital program strengthens medical education and provides the specialists for tomorrow. Such programs must be organized to serve the educational needs of the doctor. They must be supported by adequate funds and must provide the teaching material necessary to advance the doctor's education.

Hospital programs that strengthen medical education are desirable if for no other reason than that they serve to improve the quality of medical care. That they may also help to attract large numbers of qualified medical graduates makes them of even greater importance for the West. But the effectiveness of such programs as a means of recruiting additional doctors must be appraised against the national picture. Since shortages are a national problem, it is to be expected that all states will compete for the services of medical graduates. Western hospitals should vigorously reinforce their training programs, but such programs will not solve the western health manpower problem.

LICENSING OF FOREIGN DOCTORS

Another means of increasing the supply of doctors in the West is to encourage the immigration of foreign physicians. Six Western states — Idaho, Montana, Nevada, Oregon, Utah, and Wyoming — do not license foreign doctors.

TABLE 10

LICENSURE REQUIREMENTS FOR FOREIGN TRAINED PHYSICIANS

(Canada Not Included)

Arizona **Colorado**	Written examination Citizenship or first papers Basic Science Certificate Internship in United States Graduation from AMA or AAMC approved school
California	Written examination Internship in United States Additional requirements
New Mexico	Written examination Citizenship Basic Science Certificate Graduation from AMA or AAMC approved school
Washington	Written examination Basic Science Certificate Graduation from AMA or AAMC approved school
Idaho **Montana** **Nevada** **Oregon** **Utah** **Wyoming**	Not accepted
Hawaii	Graduation from AMA or AAMC approved school Written examination First papers required Basic Science Certificate Internship in United States
Alaska	Written examination Reciprocity Citizenship Basic Science Certificate Graduation from AMA or AAMC approved school

Sources: *Medical School Inquiry*, p. 255.
Staff report to Committee on Interstate and Foreign Commerce, House of Representatives, 85th Congress.
Hawaii information from Hawaiian Bureau of Budget.

One of the means of increasing the numbers of doctors in the past has been the increased licensing of foreign doctors. However, relaxation of licensing requirements to admit more foreign doctors to practice must be approached with caution. In the interest of maintaining health and educational standards, the American Medical Association and other professional bodies charged with the responsibility for maintaining the high quality of medical care and education have urged careful screening of foreign doctors to insure the licensure only of those who meet our high standards. As already noted (See pp. 29-30), there are wide variations in the quality and teaching methods of foreign medical schools, and the AMA does not accredit them. While some foreign schools come up to American standards, many more do not.

In the best interests of the public welfare, efforts to achieve maximum efficiency of medical facilities and personnel and the development of good training programs should be actively encouraged along with efforts to attract qualified foreign doctors to settle in the West. But such measures should be taken in conjunction with programs to enlarge opportunities for medical education. Only by increasing the number of medical school graduates to the point where the supply of doctors approaches the need for medical services can we meet our health manpower problems. The physician, in the words of Dr. Rappleye, is "the keystone in the arch of health services for the nation."

EXPERIMENTS IN REVAMPING MEDICAL CURRICULUM

In an effort to improve the quality of medical education and to bring about an increase in medical school graduates, the AAMC has, since 1946, encouraged experimental programs in medical schools. Medical educators believe that medical education must keep pace with the revolutionary changes taking place in medical practice. Many schools are embarking on experiments with the medical curriculum. All have the common goal of modifying medical education in an effort to educate good doctors faster.

YEAR ROUND USE OF SCHOOLS

Another means of increasing the number of medical graduates is by continuous use of medical school facilities. Dr. Turner, Secretary to the Council on Medical Education and Hospitals of the AMA, wrote:

> I am firmly convinced that medical schools and their parent universities should take very careful objective evaluation of their own resources to determine how they might use their current facilities more effectively. . . . I do not believe we have exhausted our current facilities and their potentialities by any means. I am aware of the fact that many of my colleagues in medical education will violently disagree with this point of view, but I sincerely believe it is one of those matters which we should frankly face and analyze.[1]

There are various objections to lengthening the medical school year. Many educators fear that accelerated programs could lead to lower educational standards. Some point out that faculty and students gradually become fatigued, and others object that the calendar year plan cuts down on time needed by faculties to pursue research.

END RESIDENCE RESTRICTIONS

Both inside and outside the medical profession, many have begun to urge an end to restrictions to medical school admission that are unrelated to ability. If students were to be selected solely on the basis of academic promise the schools would be assured of better students. Particularly because of residence restrictions—restrictions based on race, religion, and sex have declined in relative importance in recent years—medical schools are often forced to admit poorer students and reject better ones.

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[1] Unpublished letter to Dr. Harold L. Enarson, Director, Western Interstate Commission for Higher Education, October 21, 1958.

The primary responsibility of a state is, of course, to provide educational opportunities for its own citizens. But the question is whether the citizens of individual states stand to lose more by restrictive residence requirements than they would really gain. If the present trend toward imposing ever stricter residence rules continues, more doors may be closed to out-of-state students than can be opened by their own states. If all schools were to eliminate residence barriers, means possibly could be devised to insure that costs could be spread equitably. The problem of residence restrictions could be explored at legislative workshops sponsored by WICHE, the New England Board of Higher Education, and the Southern Regional Education Board.

However, no effort that does not include both expansion of existing facilities and new schools will meet our growing manpower needs. How many doctors will be needed to maintain present standards of medical care? "No one," said the Surgeon General, Dr. Leroy E. Burney, "has the answers, nor can absolute numbers be predicted. There is, however, wide agreement that the present national ratio of 132 physicians per 100,000 population should not be allowed to drop below that level.[1] Even to maintain 1955 Western state ratios will require considerable expansion.

Dr. Ward Darley, Executive Director of the Association of American Medical Colleges, wrote:

> I see no point in quibbling over such things as physician-population ratios, the ratios of medical students to population, etc., when we all know that irrespective of what these ratios may be, we are steadily falling behind in health service manpower in terms of both present and future needs and also when we all know that we are falling behind in providing the educational resources called for by these needs.[2]

Dr. Edward L. Turner, Secretary to the Council on Medical Education and Hospitals of the AMA, also believes that "we cannot cleanly answer the question as to 'How many doctors are enough' today, but I think that anyone who has been thinking of these problems can say without reservations that there will be a continuing need for more physicians and for the facilities to afford them adequate education and training background experiences." [3]

Dr. Burney summed up the problem as follows:

> The truth of the matter is that we in the United States are falling behind in the race for adequate medical manpower . . . Time has run out on us in preparing physicians for the future.
>
> At predicted rates of production, therefore, we will have approximately 273,000 physicians in 1970. This number represents an increase of only 19 per cent in physician supply over the present figure, as contrasted with predicted population increases of between 26 and 34 per cent. Obviously, the present physician-population ratio will have dropped—and that in a period of predictable increase in demand for medical services.
>
> The Secretary's Consultants on Medical Research and Education concluded that to maintain our present ratio of physicians to population in the next decade, "the output of physicians would have to expand by 1970 to 8,700 a year from domestic schools, plus another 750 from foreign schools. . . . The domestic output would have to rise by 1,900 per year by 1970."
>
> This estimate does not take into account any possible need to increase

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[1] Burney, *op. cit.*, p. 9.

[2] Unpublished letter to Dr. Harold L. Enarson, October 25, 1958.

[3] Unpublished letter to Dr. Harold L. Enarson, October 21, 1958.

> the physician-patient ratio due to the mobility of the population and changes in patterns of illness and types of medical service. If the new rate of production could be applied tomorrow, it would merely preserve the present conditions and would not allow for any expansion of health services for the nation.[1]

"The new rate of production" cannot "be applied tomorrow." Dr. Burney added:

> No substantial increase in the production of physicians is even in the making. At this moment, the best that can be expected is an additional 220 American graduates per year in the five-year period 1960-1965, in contrast with the 1,900 annual increase recommended by the Secretary's consultants. No matter what decisions are made, no matter what actions are taken in the next year to expand medical education in the United States, the fruits of such decisions and actions cannot be immediately realized. We are under a serious handicap in the production of medical manpower.[2]

EXPAND EXISTING FACILITIES

The number of doctors can be increased if medical schools are expanded. Recently, the AAMC urged its members to survey carefully the possibility of enlarging their facilities. In reply to a questionnaire on the feasibility of expansion if funds were available, the schools indicated the facilities could be expanded by ten per cent or more.[3]

The western schools reported to the AAMC a need for about $3,000,000 for the rehabilitation of existing facilities and between $30,000,000 and $50,000,000 for new construction. Much of this money would be used for research service and other non-teaching functions not directly related to the teaching of medical students. If funds were available, the western medical schools together could admit additional students but not enough to meet future needs.

Expansion of facilities to turn out larger classes is both difficult and costly. However, it may be less difficult and less costly than starting new schools.

BUILD NEW SCHOOLS

Although existing facilities should be expanded wherever possible, some new schools are necessary. Various estimates, ranging from 14 to 25, have been made as to how many new schools are needed in the nation. If these estimates are reasonable, on the basis of expected population, four to six of these schools should be located in the West.

New medical schools are expensive, and the initial capital costs, which run into millions of dollars, vary greatly according to the size of the school. Where existing community facilities, such as hospitals and clinics can be used, the cost of new schools is not as great as when completely new facilities must be built.

Moreover, the operating costs of medical schools are great. Since the end of World War II our medical schools have been in a state of financial crisis. The cost of medical education has risen steeply. Dr. Burney remarked that our medical schools exist in "an environment of uncertainty, understaffing, and underfinancing."

In addition to their financial troubles, the schools face the problem of finding qualified teachers to fill the several hundred vacancies now existing. Such difficulties cannot be lightly waved aside. "The central imperative of these observations," said Dr. Burney, "is that the nation must plan and act as a nation in the development of health manpower. In the complex society of today, in a period of world crises, health and educational services can no more be left to chance or exclusively to local initiative than can the development of heavy industry, consumer goods, transportation, public utilities and national defense."

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[1] Burney, *op. cit.*, p. 12.

[2] *Ibid.*, p. 10.

[3] *Medical School Inquiry*, p. 244.

TWO-YEAR PROGRAMS OF BASIC SCIENCE

Because of the costs involved in building and operating new four-year schools, medical educators have sought alternative solutions as a means of lightening the financial burden. One possible way to reduce the number of new four-year schools now needed would be to create two-year programs of basic science which would, in effect, be a "feeder" system integrated with the curricula of existing four-year schools.

The most pressing shortage of training places is in basic science facilities. Basic medical science is taught in the first two years of medical school. Training places for the third and fourth years can be expanded more easily and at less cost than can basic science facilities. Generally, there is close to a ten per cent loss between the freshman and junior year of medical school due to failures, voluntary drop-outs, and other reasons. This attrition rate, probably near the irreducible minimum, is considerably lower than the rate in some other branches of education. No matter how careful the selection process is—and it is already stricter in medicine than in most other fields—some students will fail academically, some will drop out because of illness, and others will change their minds. Every year, consequently, there are from 300 to 700 unfilled places in the junior year in all medical schools.

Many medical educators see in these vacancies the opportunity at reduced cost of increasing the annual number of graduates. Dr. Ward Darley, Executive Director of the Association of American Medical Colleges, looks upon the two-year programs of basic science as a partial solution for increasing the number of training spaces. Graduates of ten new two-year schools could fill vacancies in the 85 existing four-year schools and increase our yearly medical graduates by about 500 each year—about 25 per cent of the yearly increase the experts say we must have if the physician-population ratio is not to fall. An interlocking system of four-year with two-year "feeder" schools would cut down the waste of upper division spaces while increasing the number of graduates. One two-year school for every five four-year schools would increase the number of doctors by ten per cent.

Two-year schools can be built for about $2,000,000 and cost from $250,000 to $350,000 a year to run. An advantage of the two-year school is that it permits a beginning building program. Schools of basic science can be designed to permit future expansion. The graduates of the three existing two-year schools, North Dakota, South Dakota and Dartmouth, are able to transfer to four-year schools, but the total yearly graduates of the existing schools of basic science fill only a fraction of the existing vacancies.

One of the major problems of the two-year school, as Dr. Edward L. Turner has pointed out, is how to provide some clinical experience in the first two years. Many medical educators believe that the division of the medical curriculum into two two-year divisions of *all* basic science and *all* clinical work is not in the best interest of the student. However, the maximum amount of clinical work that is thought to be desirable in the first two years is about ten per cent of the curriculum. It is possible that this amount of clinical training could be provided by existing hospital facilities if a two-year school were to be located in an urban center and if competent and devoted clinical teachers were available for the purpose.

The danger inherent in the two-year school is that it may lead to the development of "substandard programs." As Dr. Darley wrote, "I would not like to see any more non-university sponsored medical schools come into being; in fact, I would not like to see any more medical schools come into being that would be separated physically from their parent universities, and I would not like to see any more medical schools developed that would be physically split as to their basic science and clinical years."[1] In sum, it is urgent that if new two-year programs are established, they should be developed within strong universities and that they be fully integrated with their parent institutions.

The development of new schools both of basic science and four-year schools entails the cooperation of the accrediting agencies charged with maintaining the quality of medical education. Not every state, nor every university, can justify or support a four-year, or even a two-year medical school. New schools should be built only where population and community resources are sufficient to insure continuing high standards.

There is no single solution to the problem of medical manpower needs. The West must continue to expand its medical schools and give earnest attention to the development of new ones. In these circumstances, the western states must explore every possible device for interstate planning, financing, and possibly even operation of new schools.

The West must provide additional educational facilities for medical students if it is to meet its future needs. But it must do so without impairing the present quality, either of health care or education. If the western states act cooperatively as a region, they can, by courageous experiment and imagination, solve the problem of medical manpower shortages just as they have solved other problems in the past.

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[1] Darley, *op. cit.*

APPENDIX A

Western Needs and Western Prospects—A State-by-State Summary

The following pages contain a brief narrative summary of the principal data collected for each state. There state-by-state summaries are abstracted from the body of the report, principally from the various tables and charts. An index of these is found on page 4.

Arizona

Arizona may anticipate 2,327,000 people by 1975—an increase of 134 per cent from 1955 and the second largest rate of increase in the West. In 1955, Arizona had 1,018 doctors and a physician-population ratio of 104. To maintain this ratio, Arizona will need 2,392 doctors by 1975—an increase of 135 per cent. In 1957, Arizona had 1,075 doctors and a ratio of 95. Arizona sends a very small percentage of her young people to medical school, and more than half of them leave the West for training. In 1956, the peak year, 47 Arizona freshman students were in medical school; in 1957 there were 34. Most of Arizona's doctors come from outside the West. Between 1947 and 1956, Arizona received 123 doctors from other western states and 778 from outside the West. This migration was insufficient to maintain the 1949 ratio of 110 doctors per 100,000 population. Arizona can expect her physician-population ratio to decline unless doctor migration is stepped up sharply. By 1965, her students will find it more difficult to gain admittance to medical schools.

California

California can expect a population of 23,565,000 by 1975—an increase of 87.7 per cent. In 1955 California had 20,763 doctors and a physician-population ratio of 159 per 100,000. In 1957 there were 2,1803 doctors and a ratio of 157. The five medical schools in the state do not graduate nearly the number of doctors required for her huge population. By 1975 the state will need 37,365 doctors, an increase of 80 per cent if it is to maintain its 1955 ratio. Between 1947 and 1956, California licensed 17,318 doctors, of whom 3,566 were from the West. California educated about one-eighth of the doctors licensed during this period. Of the remainder, 12,830 came from outside the West, plus 922 alien doctors. California licenses more foreign doctors than any other state except New York. Relative to her size, California provides a very small number of medical training places. In 1954, the peak year, the state had 466 freshman students in all medical schools, and 454 in 1957. Within a few years, California students will find it difficult to gain admission to schools outside the state. The state medical schools received, in 1957, a total of 2,398 applications (some of which were probably duplications) and accepted 351 students. Unless present training facilities are expanded, California's doctor migration must increase markedly, or the physician-population ratio may, by 1975, decline sharply. Prospects are poor for the necessary increase in migration to maintain the present ratio.

Colorado

Colorado probably will have 2,071,000 people by 1975—an increase of 42.2 per cent. In 1955, Colorado had 2,385 doctors and a physician-population ratio of 154, a drop from the 1949 ratio of 175 per 100,000. In 1957, there were 2,390 doctors and a ratio of 143. Colorado will need 3,234 doctors in 1975, an increase of 40 per cent to maintain the 1955 ratio. Colorado educates about three-quarters of her medical students but does not educate nearly the number of doctors the state needs. In 1948, the peak year, Colorado had 87 freshmen in all medical schools and 82 in 1957. Colorado students do not leave the state in appreciable numbers to study, nor do many apply outside the state. If they are not admitted to the state school their prospects by 1965 for acceptance by out-of-state schools are not good. Between 1947 and 1956, Colorado licensed 1,882 doctors, of whom 31 were foreign and 1,151 came from outside the West. 608 were Colorado graduates. Over a ten-year period Colorado produced only about a third of the doctors she licensed. The doctor in-migration, however, could not keep the physician ratio from falling. Colorado's chance of maintaining her present ratio is slim unless present training facilities are expanded.

Idaho

Idaho may reach a population of 780,000 by 1975—an increase of 26.8 per cent. In 1955 Idaho had 568 doctors, a ratio of 93 per 100,000, which was a slight increase over the 1949 ratio of 85 but well below the present national average of 133. In 1957, there were 564 doctors and a ratio of 88. The state will need 744 doctors in 1975 to keep its 1955 ratio. More than half of Idaho's students leave the West for their education. In 1949, the peak year, Idaho had 32 freshmen in all medical schools. In 1957 there were 23. Since all Idaho students must leave the state for education, medical school places for them will be hard to find by 1965. Between 1947 and 1956 Idaho licensed 537 doctors. 361 were from outside the West, and 57 were from other western states. Except for Canadians, the state does not license foreign doctors. Idaho's population will increase much more slowly than the West as a whole. Unless physician migration rate increases at the same rate as the population, the physician-population ratio will decline.

Montana

Montana's population is expected to reach 767,000 in 1975—an increase of 22.1 per cent, the lowest rate of increase in the West. In 1955, Montana had 621 doctors and a physician-population ratio of 98. The physician-population ratio has remained virtually unchanged since 1949. In 1957, there were 629 doctors and a ratio of 95. The state will need 784 doctors in 1975 to maintain its 1955 ratio, an increase of 26 per cent. More than half of Montana's students leave the West for their education. In 1950, the peak year, Montana had 31 freshmen in all medical schools, 24 in 1957. Since all students must leave the state for training, they will by 1965 have a decreasing chance of admittance to medical schools. Between 1947 and 1956, Montana licensed 507 doctors, of whom 401 came from outside the West. Montana does not license foreign doctors, although there has been pressure from within the state to change the medical practice act to permit licensing of aliens. Unless migration increases at the same rate as the population — an unlikely prospect — Montana's physician-population ratio will decline.

Nevada

In 1975 Nevada may reach a population of 563,000—an increase of 158.3 per cent, the fastest rate of growth in the West. In 1955, Nevada had 228 doctors and a physician-population ratio of 101 per 100,000. This was a decline from the 1949 ratio of 125. In 1957, there were 288 doctors and a ratio of 96. The state will need 606 doctors in 1975 to preserve its 1955 ratio, an increase of 168 per cent. In 1955, Nevada had five freshmen in all medical schools. In 1947, the peak year, she had seven. In 1957 she had only three. So few of Nevada's students go to medical school that they are an insignificant factor in the state's medical manpower situation. Between 1947 and 1956, Nevada licensed 225 doctors; 156 came from outside the West. Of the remainder from other western states, 52 came from California. The state does not license foreign doctors. Nevada cannot hope to maintain her 1955 physician-population ratio in 1975.

New Mexico

New Mexico can expect a population of 1,425,000 in 1975—an increase of 82.4 per cent over 1954. In 1955 New Mexico had 632 doctors and a physician-population ratio of 79, almost the same as her 1949 ratio of 80. In 1957 there were 647 doctors and a ratio of 78. New Mexico's ratio is the lowest in the West and one of the lowest in the country. In 1975 New Mexico will need 1,106 doctors to keep her 1955 ratio, an increase of 75 per cent. Three-quarters of New Mexico freshmen leave the West for medical school. In 1950, the peak year, there were 31 freshmen in all schools, and 18 in 1957. Between 1947 and 1956 New Mexico licensed 567 doctors. Fourteen of these were aliens, 489 came from outside the West, and the remaining 64 from other western states. New Mexico's present low ratio is almost certain to decline further by 1975.

Oregon

Oregon may grow to 2,344,000 people by 1975—an increase of 43 per cent. In 1955, Oregon had 2,098 doctors and a physician-population ratio of 126 per 100,000, a slight increase over the 1949 ratio of 121. In 1957 there were 2,142 doctors and a ratio of 121. She will need 2,898 doctors in 1975, an increase of 38 per cent to maintain 1955 levels. About three-quarters of her freshmen receive their education in the state. In 1957, the peak year, the state had 84 freshmen in all schools. Between 1947 and 1956, Oregon licensed 1,390 doctors; 862 came from outside the West, 351 from Oregon, and the remainder from other western states — mostly from California. Except for Canadians, Oregon does not license foreign doctors. Oregon imports half her doctors, the lowest percentage of any state in the West except Utah. Unless migration increases at the same rate as the population, Oregon's physician-population ratio will decline by 1975 if the state does not create more training places.

Utah

Utah will have a population of 1,231,000 people by 1975, an increase of 62.6 per cent. In 1955 the state had 1,026 doctors and a physician-population ratio of 131, a slight increase over the 1949 ratio of 124. This increase can probably be attributed to the expansion of Utah's school of basic science to a four-year school. In 1957 there were 1,026 doctors and a ratio of 120. In 1975 Utah will need 1,572 doctors to maintain 1955 levels, an increase of 53 per cent. The peak year for Utah freshmen was 1948, when 67 were in all medical schools. There were 61 in 1957. Utah educates over four-fifths of her medical students and imports less than half of her doctors—the lowest importation rate in the West. Between 1947 and 1956, Utah licensed 641 doctors, of whom 140 were residents of Utah, 400 came from outside the West, and the remainder from other western states, principally California. Utah does not license foreign doctors. Unless doctor migration increases at the same rate as the population, Utah's physician-population ratio will decline sharply if additional training facilities are not built.

Washington

In 1975 Washington will have a population of 3,530,000—an increase of 39 per cent. In 1955 Washington had 3,238 doctors and a physician-population ratio of 126, a respectable increase over her 1949 ratio of 114, which can probably be attributed to the opening of her medical school in 1945. In 1957 there were 3,269 doctors and a ratio of 120. Washington will need 4,410 doctors in 1975 to maintain 1955 ratios, an increase of 36 per cent. The state educates a majority of her medical students. In 1951, the peak year, 121 Washington freshmen were in all schools. In 1957 the state had 90. Between 1947 and 1956, Washington licensed 2,322 doctors, of whom 94 were aliens, 1,611 came from outside the West, 198 from California, 163 ~~617~~ from home, and the remainder from other western states. Unless more training places are created, doctor migration must increase at the same rate as the population, or Washington's physician-population ratio is certain to decline.

Wyoming

Wyoming will probably have a population of 418,000 in 1975—an increase of 34 per cent, but by 1975 Wyoming will be the least populated state in the union. In 1955 the state had 263 doctors and a physician-population ratio of 86, a slight decrease from the 1949 ratio. In 1957 there were 256 doctors and a ratio of 81. Wyoming will need 344 doctors in 1975, an increase of 31 per cent if 1955 levels are to be kept. More than half of Wyoming's medical students now leave the West to study. In 1950, the peak year, Wyoming had 23 freshmen in all schools. In 1957, there were 16. Between 1947 and 1956 Wyoming licensed 235 doctors, of whom 174 came from outside the West. Wyoming does not license foreign doctors. Unless doctor migration increases at the same rate as the population, by 1975 Wyoming's physician-population ratio will decline.

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APPENDIX B

Council on Medical Education Supports Additional Facilities for Basic Medical Education

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS SUPPORTS DEVELOPMENT OF ADDITIONAL FACILITIES FOR BASIC MEDICAL EDUCATION [1]

The 1956-1957 Annual Report on Medical Education in the United States and Canada included a statement on the future need for physicians which had been prepared by the Association of American Medical Colleges. The Council on Medical Education and Hospitals has previously indicated the existence of the challenges in this field presented by the increasing population, rapid accumulation of scientific knowledge applicable to medicine, and the changing social and economic facets of the American scene. The Council on Medical Education and Hospitals as is indicated in the following statement supports its own previous comments and those of the Association of American Medical Colleges as to the desirability of developing additional facilities for medical education.

Through the medium of its various activities and particularly in its Annual Report on Medical Education in the United States and Canada, the Council on Medical Education and Hospitals of the American Medical Association has endeavored to present and interpret the changing scene in medical education to the profession. With the support of the medical profession and in cooperation with the Association of American Medical Colleges, the American College of Surgeons, the American College of Physicians, the various specialty boards, the Joint Commission on Accreditation of Hospitals, the American Hospital Association, and other organizations, constant and sincere efforts have been made to assist in the advancement of medical education in keeping with the knowledge, trends, and needs of the period.

In recent years the position of the American Medical Association in regard to present and future needs in medical education has frequently been misinterpreted by many individuals and by some organizations through the misuse of statistical data. Statistical information has at times been taken out of context and interpreted to the effect that the official position of the American Medical Association is that there is no need for increased numbers of physicians. No such official position has ever been enunciated. American medicine, as was indicated earlier in this report in reference to Dr. Allman's comments at the 54th Congress on Medical Education and Licensure, fully recognizes the needs being brought about by the increasing population, social and economic trends, and the changing dimensions of medical knowledge and its application. The primary concern of American medicine is that these needs be carefully analyzed and that they be met as a result of sound developments based on the best possible knowledge.

The Council on Medical Education and Hospitals recognizes that the physician-population ratios, on which most current projections of medical personnel have been made, have remained relatively constant for a number of years. It is difficult, however, in the rapidly changing modern scene, to determine whether this relative ratio of physicians per unit of population might be reduced or should be augmented to meet the medical care, teaching, and research challenges of the future. On the other hand, the increasing population together with the various other facets of the shifting pattern obviously indicate the need for constantly increasing the number of physicians. This necessitates consideration on the part of existing medical schools as to possible augmentation of the number of students admitted as well as the development of new facilities. Furthermore, the Council believes it is a logical function and responsibility of American medicine to encourage institutions of higher education where medical education has not been undertaken in the past to give serious consideration to the development of opportunities in this field if all other factors make it appear desirable to do so. The Council on Medical Education and Hospitals sincerely believes it is a responsibility of the American Medical Association to take effective leadership in presenting these increased needs as objectively as possible.

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[1] *Journal of the American Medical Association*, Vol. 168, (Nov. 15, 1958), p. 1470.

The Council on Medical Education and Hospitals and the Association of American Medical Colleges, independently and through the Liaison Committee on Medical Education, are on record in encouraging the consideration and creation of both four-year programs of medical education and of two-year programs of basic medical science, where institutions of higher education offer the setting which would make such developments mutually advantageous and desirable.

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APPENDIX C

Statement of the Future Needs for Physicians by the Association of American Medical Colleges

The changing nature of our industrial civilization, the increasing population, and the expanding knowledge revealed by research have and will continue to have a profound effect on our educational programs. It is a responsibility of the universities and of the professions to recognize and meet the needs of society. There is no area in which this obligation is greater than in the field of the health sciences.

Within the next decade, the health care of the American people based on greater knowledge through research will require increasing numbers of all types of personnel including physicians. Further, many more young men and women will be seeking higher education and training in one of the health professions.

In the ten-year period (1945-46 to 1955-56) since the end of World War II the number of medical schools has increased from 77 to 82, the number of entering freshmen from 6,060 to 7,686, and the number of graduates from 5,655 to 6,485. Two new medical schools admitted a freshmen class for the first time in the Fall of 1956. At least one other school is in process of formation and will admit its first class in 1959.

Although the Association of American Medical Colleges is proud of this record of the medical schools in responding to the needs of the post-war world, it also believes that more remains to be done. Medical education should be expanded further without impairment of the high quality which has been carefully built up in the United States since 1910. It is possible that some existing schools can, with new facilities and larger faculties, accept additional students, but the need will not be met completely in this manner. The larger contribution in number of students will come, as it has in the past, by the establishment of new schools.

On the other hand, many schools have already expanded their enrollment without increase or improvement of physical plant. The 84th Congress authorized construction of research facilities, but as was pointed out by the President, this met only a part of the need to maintain the present quality of teaching for the present number of students.

The Association of American Medical Colleges urges its member institutions to survey their potentialities and capacities in the light of the future need for health personnel, and urges universities in large urban centers, now without a medical school, to give serious consideration to the establishment of one.

The latent period between the determination to form a medical school and service of the graduates to the people is 8 to 14 years; 2 to 4 years to plan the program, construct the buildings, and secure a faculty; 4 years for medical education and 2 to 6 years for hospital training as an intern and resident. Hence, if we are to meet the problem, it should be borne in mind that plans made in 1956 are not for next year or the year after, but for the needs of the nation in 1964 to 1970.

A program of expansion will require large sums of money, both for capital expenditures and for operating expenses. The Association of American Medical Colleges is dedicated to the preservation of joint and coordinated support of medical education from private and government sources and believes the American people are willing and able to back ventures which will mean better health and a happier life.

From *The Journal of Medical Education*, Volume 32. (January, 1957), pp. 47-48.

APPENDIX D

Functions and Structure of a Modern Medical School

I. INTRODUCTION

This statement has been prepared in collaboration with the Association of American Medical Colleges and represents the general concepts of that organization as well as the Council on Medical Education and Hospitals of the American Medical Association. It is intended that this material be used as a guide with the hope that it may assist in attaining medical education of ever higher standards. Experience indicates that these are best nurtured in an environment in which there is not excessive concern with standardization. The concepts expressed here will serve as general but not specific criteria in the medical school accreditation program. However, it is urged that this document not be interpreted as an obstacle to soundly conceived experimentation in medical education.

II. THE RESPONSIBILITIES AND OBJECTIVES OF A MEDICAL SCHOOL

As an institution of higher education, a medical school has three inherent responsibilities which are so closely related as to be inseparable.

1. *A medical school should provide for its undergraduate students the opportunity to acquire a sound, basic education in medicine and should foster the development of lifelong habits of scholarship.*

2. *A medical school should contribute to the advancement of knowledge through research.*

3. *A medical school should contribute to the development of teachers, investigators and practitioners through programs of graduate education including residency training.*

By virtue of its university orientation or as a result of the clinical facilities and personnel available, a medical school should assume additional responsibilities such as those listed below to the degree that its resources permit without weakening its basic program:

1. Leadership in the development of adequate opportunities for the continuing education of practicing physicians.

2. Professional service to patients primarily to fulfill its educational and research obligations.

3. Participation in the educational programs of other professions in the health field, such as dentistry, nursing, and pharmacy, as well as in selected areas of the general university program.

4. Training of technical personnel in paramedical fields.

A medical school should develop a clear definition of its total objectives, appropriate to the needs of the community it is designed to serve and the resources at its disposal. When objectives are clearly defined, they should be made familiar to faculty and students alike, so that efforts of all will be directed toward their achievement.

A statement of "The Objectives of Undergraduate Medical Education" has been prepared by the Association of American Medical Colleges. It is believed that this can well serve as the basis for a definition of this portion of the overall objectives of a medical school and is reproduced in part below. The full statement can be found in the *Journal of Medical Education* (28:-57-59 (March) 1953.)

"Undergraduate medical education must provide a solid foundation for the future physician's development. It should not aim at presenting the complete, detailed, systematic body of knowledge concerning each and every medical and related discipline. Rather, it must provide the setting in which the student can learn fundamental prin-

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Published originally as "Essentials of an Acceptable Medical School" and approved by the House of Delegates of the American Medical Association, June, 1910, and revised April, 1913; March and October, 1927; June, 1933; June, 1934; August, 1936; June, 1938; December, 1945 and December, 1951.

ciples applicable to the whole body of medical knowledge, establish habits of reasoned and critical judgment of evidence and experience, and develop an ability to use these principles and judgments wisely in solving problems of health and disease.

"Undergraduate medical education cannot achieve these aims if the student is relegated to a passive role. It must provide incentive for active learning on the part of the student. This can best be done by giving him definite responsibility in real, day-to-day problems of health and disease. This responsibility must, of course, be carefully graded to the student's ability and experience and must be exercised under careful guidance by the faculty.

"Given incentive to learn and guidance toward the grasp of principles, with the problems of health and disease as a frame of reference, the student will build the necessary foundation for his career in medicine, be it practice (general or limited), teaching, research or administration.

"In working toward this fundamental objective, undergraduate medical schools must strive to help the student to: acquire basic professional knowledge; establish essential habits; attain clinical and social skills necessary to the best utilization of that knowledge; and develop those basic intellectual attitudes, and ethical or moral principles which are essential if he is to gain and maintain the confidence and trust of those whom he treats, the respect of those with whom he works and the support of the community in which he lives.

"These . . . aims are obviously not distinctly separable, but are mutually interdependent. All together they summarize the desirable characteristics of the responsible professional person medical education is attempting to produce."

III. ORGANIZATION AND ADMINISTRATION

A. *Governing Body.* — A medical school should be incorporated as a nonprofit institution, if possible as a part of a university, since a university can so well provide the milieu and support required by a modern medical school.

If not a component of a university, a medical school should have a board of trustees composed like that of a university of public spirited men or women having no financial interest in the operation of the school or its associated hospitals. The trustees should serve for fairly long and overlapping terms.

Officers and faculty of the school should be appointed by the board of trustees. In keeping with generally accepted principles of administration, it is usually not desirable for a member of the board of trustees to serve simultaneously as an administrator or a member of the faculty of the medical school.

The manner in which the medical school is expected to conduct its affairs, including the responsibilities and privileges of administrative officers, faculty and students should be clearly indicated in bylaws approved for the medical school itself or adequately presented in the bylaws of the parent university.

B. *Administrative Officers of the Medical School.*—There should be competent supervision of the medical school by the dean or other executive officer who, by training and experience, is qualified to provide leadership in interpreting high standards in medical education, and who has sufficient authority to implement such standards. The dean should have the respect and support of the faculty and ready access to the university president and other officials. The establishment and maintenance of a congenial and productive relationship with the local medical profession is desirable and important to the school and the profession. It can be best assured through discussions of mutual problems by representatives of the school and practicing profession.

Because of the diverse and heavy responsibilities placed upon the dean or executive officer, assistance by suitably qualified persons should be provided. In many medical schools, for example, there is an assistant dean who devotes major attention to student affairs and another assistant for administering the postgraduate program. In the conduct of the fiscal affairs of the school, the dean should have the assistance of a capable business officer.

C. *Faculty Organization.*—The faculty should be organized into suitable departments representing the major basic science and clinical fields. It is to be noted that this is primarily an administrative convenience; it should not form the sole basis for structuring the curriculum. Each such department should have a voice, through appropriate committees of the faculty, in the administration of the academic affairs of the school. Foremost among these should be an executive committee of the faculty composed primarily of the responsible administrative officials and the chairmen of those departments which have a major role in the education program. Usually these are Anatomy, Physiology, Biochemistry, Microbiology, Pharmacology, Pathology, Medicine, Surgery, Pediatrics, Obstetrics-Gynecology, Psychiatry, and Preventive Medicine and Public Health. This commonly utilized pattern allows for balance between basic science and clinical viewpoints in the committee's major function of determining, with the dean, medical school policies for consideration, where indicated, by higher university authority.

There should be such committees of the faculty as admissions, promotions, curriculum, postgraduate medical education, library, and others needed to serve the welfare of the school.

The entire faculty should meet one or more times annually to provide an opportunity for all faculty members to become acquainted with and to discuss medical school policies and practices.

Nominations for faculty appointments should originate in the faculty under the leadership of the dean. Commonly, nominations for appointments at the lower academic ranks are made by the head of the department concerned, after thorough discussions of the nominees by the entire department. At the professorial and the associate professorial levels this procedure may be profitably supplemented or supplanted by the appointment of a nominating committee composed of members of several departments, whose standing and judgment are generally unquestioned. Recommendations are made to the faculty executive committee and dean who, in turn, recommend to the president and board of trustees through established administrative channels.

D. *Finances.*—Experience has established that a medical school cannot successfully carry out its many activities solely on the income derived from student fees. Furthermore, certain of these activities are not directed primarily to the education of the medical student and he should not be expected to support them. To adequately fulfill its obligation, a medical school should have other substantial sources of revenue.

Each department within the school should prepare its budget in consultation with the dean, who is ultimately responsible for the total budget and its presentation to the proper authority.

IV. FACULTY

The school should have a competent staff with demonstrated interest and ability in teaching and research. Such dual activity by the faculty is most likely to provide the educational milieu appropriate in a modern medical school as well as best carry out its objectives and responsibilities.

Reasonable security of tenure and possibility of advancement should be assured in order that the personnel of the faculty may have adequate stability. Compensation of full time members of the faculty should be sufficient to enable them to support themselves and their families.

The number of instructors in each basic science and clinical department should be sufficient to meet the requirements of a modern medical educational program as well as allow adequate time for research by each instructor. Full time teacher-student ratios may vary widely depending on the course content, educational methods, research activities, the availability of competent part time or voluntary staff, and other factors. Recognition of the values of intimate teacher-student relationships and widespread use of methods favoring the active role of the student in his own education have decreased dependence on didactic exercises. Increasing use has also been made of interdepartmental teaching. These factors have tended to increase the relative size of the instructional staff.

The faculty personnel in the basic science disciplines should be almost entirely on a full time basis. In the major clinical areas of medicine, surgery, pediatrics, psychiatry, obstetrics and gynecology, there should be a nucleus of full time instructors who have as their major responsibility the planning and supervision of the department's educational program and the conduct of research.

V. STUDENTS

The admission of students to a medical school should be the responsibility of a committee of the faculty. Decisions regarding admission should be based not only on satisfactory prior scholastic accomplishment but also on such factors as personality and emotional characteristics, motivation, industry, resourcefulness, and health. Evaluation of these factors should be developed through personal interviews, college records of academic and nonacademic activities, results of medical college admissions tests, and pertinent letters of recommendation. All records dealing with admissions should be carefully filed and procedures periodically reviewed in a search for better methods.

At least three years of college education is required for most students and four years is recommended as a preparation for medical study. Only rarely and under exceptional circumstances will a medical school be justified in admitting a superior student after two years of college study. The National Committee of Regional Accrediting Agencies maintains a listing[1] of institutions of higher education which have been found to offer commendable educational programs. Prospective medical students should acquire their preparatory education at a college of arts and sciences so listed and a medical school admissions committee should scrutinize with particular care the qualifications of applicants whose preparatory study has been done at other institutions.

Because basic knowledge of biology, physics, inorganic and organic chemistry and human behavior are the foundation stones of medicine, adequate college courses in these subjects, as well as demonstrated competence in English, should be required. It is important that a medical college restrict its admission requirements to this minimum so that a college student preparing for the study of medicine will have the opportunity to acquire a broad liberal education or to study a specific field in depth according to individual interest and ability. The complexity of modern medicine can be best served by physicians who in composite represent a variety of backgrounds in education and experience.

Advanced standing may be granted to students for work done in other medical schools, but only when a student's previous work is qualitatively and quantitatively equivalent to that required of regularly enrolled students, as officially verified by correspondence with the school previously attended. Because of the diversity and greater integration of the total curriculum, transfers are becoming increasingly difficult but usually are least disruptive of the student's education at the end of the second year.

The number of students who can have an adequate education in a medical school is related to the laboratory and hospital facilities available and to the size and qualifications of the teaching staff (see also IV. Faculty). A close personal contact between students and members of the teaching staff results in a quality of educational experience that is not possible in an institution where the number of students is excessive in relation to the staff and facilities.

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[1] A copy can be obtained by addressing the National Commission on Accrediting, 1785 Massachusetts Ave., N.W., Washington 6, D. C.

There should be a system of student records showing conveniently and in detail the admissions credentials as well as the grades or other records of performance in the school, by means of which an exact knowledge can be obtained regarding each student's work and qualifications. Qualitative evaluations of each student by instructors should be included in the student records.

An adequate provision for student counseling should be in effect. Many schools have an assistant responsible to the dean for such counseling.

There should be an active student health service providing for periodic medical examination and medical care for the student body. This is important not only in the maintenance of student health but also because of its inherent educational values.

VI. FACILITIES

A medical school should own or enjoy the assured use of buildings and equipment adequate quantitatively and qualitatively to provide an environment most conducive to productivity of faculty and students in the fulfillment of the total objectives of the school. If possible, all of the basic medical sciences should be housed in a building which adjoins in some manner the clinical facilities so as to promote cooperative teaching efforts and allow all departments ready access to clinical material.

A well maintained and catalogued medical library that can be used conveniently and effectively by both students and faculty is essential to a modern medical school. A trained librarian with experience in medical library work should be employed to supervise the development and operation of the library with the advice and assistance of an active representative committee of the faculty. The library should receive regularly the leading medical periodicals, the current numbers of which should be readily accessible. Adequate arrangements should be made by the librarian and the faculty to instruct all students in the use of the library at the beginning of their medical studies.

The school should own or have the unquestioned right to appoint the attending staff of a general hospital for clinical teaching. In the event that a medical school depends for clinical teaching on an independent hospital, it is essential that the clinical teachers, either on nomination by the school or by agreement in conference between school and hospital, be appointed by the hospital trustees to appropriate positions on the hospital staff. The teaching hospitals should be either adjoining or in close proximity to the school and should provide sufficient patients to permit students individually to observe, work up, and study the progress of the common variety of medical and surgical cases as well as a fair number of patients in each of the other major specialties.

There should be a sufficient number of patients so that each student on a hospital clerkship can be assigned that number of new cases of teaching value each week for thorough study that the faculty judges to be of maximum educational value. For example, this may be two new patients a week in one department or five new cases weekly in another, depending upon the orientation, objectives, and teaching program of the department concerned. Therefore, no fixed number of hospital beds or patients per student can be established because of the variables involved. Medical education should emphasize intensive long term study by each student of relatively fewer patients rather than superficial observation of many patients.

The school should own or have unquestioned use of well ordered facilities for the diagnosis, treatment and follow-up of ambulatory patients. The attending staff should be drawn from the faculty including those of senior rank. The number of new cases per day available to each student serving an outpatient clerkship should be compatible with the educational objectives and teaching program of the department as well as the school.

There should be sufficient offices, laboratories, and conference rooms as a part of or conveniently close to the hospital and outpatient clinical facilities to meet the needs of faculty and students. The hospital floors should provide adequate space and facilities for student clerks to study their patients.

VII. EDUCATIONAL PROGRAM

Before the curriculum, methods and details of an educational program can be decided, the objectives of the program should be formulated.

The objectives should clearly indicate that an undergraduate medical education provides merely a sound foundation for further education during the internship and residency periods, as well as throughout professional life. Four years of education in medical school is not by itself sufficient to prepare a physician for practice today. In fact, the yearly advances in medicine demand that each physician continue his education throughout his career. It is also obvious that no physician can master the whole spectrum of medical knowledge.

No rigid curriculum can be prescribed for accomplishing the objectives of medical education. On the contrary, it is the responsibility of the faculty of each school continually to reevaluate its curriculum and to provide in accordance with its own particular setting and in recognition of advances in science a sound and well-integrated educational program. Each school should utilize those methods and approaches that the particular interests and abilities of the faculty indicate would provide the most effective education in the framework of the available facilities. The traditionally separate disciplines are finding rewarding educational research results in working together cooperatively.

Through the various educational methods and to the extent deemed best by the faculty to accomplish the objectives of medical education, each medical school should offer education in the following subjects during the four year curriculum:

Human Anatomy, Biochemistry, Physiology, Microbiology, Pharmacology, Pathology, Clinical Laboratory Diagnosis, Physical Diagnosis, Internal Medicine, Pediatrics, Obstetrics and Gynecology, Preventive Medicine and Public Health, Psychiatry, Radiology, and Surgery. Specialty areas in medicine and surgery are best integrated in the teaching of the major disciplines. Consideration of social, emotional and environmental factors in health and disease is properly the responsibility of all clinical departments. Medical ethics, legal medicine, biostatistics and medical genetics should be included in the educational program.

The traditional emphasis on lectures, demonstrations and amphitheater clinics in which the role of the student is passive has shifted to greater use of individual student and small group projects, conferences, seminars, and the "case method" of education, in all of which the student actively participates in his own education. The allotment of some unscheduled student time in the weekly program to allow for reading, research or other independent pursuits is desirable.

In the clinical years particularly, there is no substitute for the "case method" of clinical education, in which individual students work up individual patients under guidance in the hospital wards and in outpatient clinics. Such assignments should occupy most of the time and energy of third and fourth year medical students. The student should be encouraged to feel a genuine responsibility as part of a team of physicians studying the patient, and not as a classroom student with prescribed hours of work. The student's work-up of each case including progress notes should become part of the hospital's permanent record of the case. Such case studies should serve as the point of departure for informal conferences, rounds, and reading. Lectures and other didactic exercises cannot replace, though they may supplement, bedside learning.

VIII. ACCREDITATION OF MEDICAL SCHOOLS

The American Medical Association, through its Council on Medical Education and Hospitals, and the Association of American Medical Colleges, through its Executive Council, serve as the recognized accrediting agencies for medical schools. Though retaining their individual identities, both groups work very closely in this activity through the Liaison Committee on Medical Education. To be accredited, a medical school must be considered approved by the Council on Medical Education and Hospitals and offered membership in the Association of American Medical Colleges This is granted on the finding of a sound educational program as a result of a survey conducted jointly by both organizations.

It is the intent that newly developing medical schools should be surveyed during each of the first four years of active existence. Provisional accreditation is granted, when the program warrants, for the first two years of the curriculum and definitive action is taken during the implementation of the fourth year of the curriculum.

Existing medical schools are surveyed at regular intervals. Every attempt is made to fulfill requests for interim surveys as a consultant service to the medical schools.

A medical school to be surveyed is requested to provide basic information on forms forwarded in advance. After careful study of this material, the survey team of three or four members visits the medical school for three to five days. On completion of its visit, the survey team confers with the responsible administrative officials of the medical school and its parent university, indicating to them the nature of the major findings and recommendations. A complete, written report is prepared and considered separately by the Council on Medical Education and Hospitals and the Executive Council of the Association of American Medical Colleges and then jointly by the Liaison Committee on Medical Education. The action of each group and the complete report is then transmitted to the medical school dean and university president.

Application for the further information concerning this process can be obtained from the Secretary, Council on Medical Education and Hospitals, American Medical Association, 535 N. Dearborn St., Chicago 10, or the Secretary, Association of American Medical Colleges, 2530 Ridge Ave., Evanston, Ill.

APPENDIX E

Accreditation Process for a New Medical School

Since the turn of the century, in order to maintain increasingly high standards, the Association of American Medical Colleges and the Council on Medical Education and Hospitals of the American Medical Association have joined in a program in which they pay a periodic visit to each of the medical schools of Canada and the United States and its possessions. The mechanism which the AMA and the AAMC have established for the conduct of these visits is known as the Liaison Committee on Medical Education. While the visits as conducted by this committee are essential to the official accreditation of these schools, they have also become the medium through which each school can be made aware of its weaknesses, of what is needful to correct these weaknesses, and also of its strengths and the opportunities and challenges these provide.

The visiting teams represent the best collective thinking of the educators and the profession. The standards that are adhered to are quite general and are set up so as to provide an umbrella under which each school can use its own initiative in planning an effective curriculum.

Since the accreditation of a new school of medicine will ultimately become the responsibility of the American Medical Association and the Association of American Medical Colleges, these two agencies stand ready to consult with responsible individuals who might be contemplating the development of such new schools. As a preliminary to such consultation, the Liaison Committee on Medical Education will want information dealing with the following five areas:

First of all, the AMA and the AAMC believe that, even though the initial stimulus for development of a new school may come from such sources as a university, a college, a medical society or hospital, the establishment of such programs should occur within the environment of strong universities or liberal arts colleges. Thus the matter of basic sponsorship is important.

The second major concern deals with endorsement. It is important to the success of a new medical school that it have the enthusiastic support of all individuals, agencies and professional groups which can logically be expected to participate or have active interest in its development and the maintenance of its program. Thus among those who should be so interested are state and city governments, medical societies and often allied professions and non-professional city and state lay groups.

The third important facet deals with finances. Any serious initial consideration of the establishment of a new medical school, whether a two-year basic medical science program or a full four-year program, should incorporate a realistic appraisal of likely sources for the capital expenditures and operating funds at a level to provide and maintain facilities and faculties necessary for sound educational and research endeavors.

The fourth major area of consideration deals with students. The AMA and the AAMC believe that there should be available an adequate pool of able students who have been well prepared for the study of medicine. There should be assurance that contemplated admission policies would be designed primarily to attract the most capable students without excessive concern for state of residence.

The final basic consideration deals with patient resources. The contemplated school should have access under circumstances suitable for a teaching institution to an adequate number of patients, so as to provide a well-rounded clinical experience with both hospitalized and ambulant patients.

There are several publications which can be of help to the consideration of a new school of medicine. Those interested in the references to these can obtain same by writing to either the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois or the Association of American Medical Colleges, 2530 Ridge Avenue, Evanston, Illinois, or to the office of the Western Interstate Commission for Higher Education, Fleming Law Building, University of Colorado, Boulder, Colorado.

APPENDIX F

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Table 1

GEOGRAPHICAL SOURCES OF WESTERN PHYSICIANS FOR THE PERIOD 1947-1956

‡ State or Country of Previous License or where Medical Education was Received

License Issued by:		Arizona	California	Colorado	Idaho	Montana	Nevada	New Mexico	Oregon	Utah	Washington	Wyoming	Total West	Total Non-West	Total U. S.	Canada	Europe	Asia	Other Foreign	Total Foreign	GRAND TOTAL	Total out-of-state sources*	% Physicians practicing in 1955 furnished from Out-of-State Sources 1947-56**
Arizona	Examination		17	6					1	5	0		29	104	133	2	5	1	1	9	142		
	Reciprocity		38	29	1	0	1	2	8	4	10	1	94	674	768					6	774		
	Total		55	35	1	0	1	2	9	9	10	1	123	778	901					15	916	916	90%
California	Examination		2684	18					107	82	38		2929	1455	4384	209	494	99	120	922	5306		
	Reciprocity	31		166	18	14	7	2	144	94	155	6	637	11,375	12,012					0	12,012		
	Total	31	2684	184	18	14	7	2	251	176	193	6	3566	12,830	16,396					922	17,318	14,634	70%
Colorado	Examination		21	608					6	6	0		641	164	805	1	29	0	1	31	836		
	Reciprocity	4	42		1	3	1	2	1	2	3	1	60	987	1047					0	1047		
	Total	4	63	608	1	3	1	2	7	8	3	1	701	1151	1852					31	1883	1275	53%
Idaho	Examination		13	6					20	18	0		57	126	183	3	0	0	0	3	186		
	Reciprocity	2	47	17		1	0	0	12	21	15	1	116	235	351					0	351		
	Total	2	60	23		1	0	0	32	39	15	1	173	361	534					3	537	537	95%
Montana	Examination		4	3					5	2	2		16	49	65	0	0	0	0	0	65		
	Reciprocity	1	30	26	3		0	1	9	7	12	1	90	352	442					0	442		
	Total	1	34	29	3		0	1	14	9	14	1	106	401	507					0	507	507	82%
Nevada	Examination		0	0					0	1	0		1	19	20	1	0	0	0	1	21		
	Reciprocity	0	52	2	1	2		0	1	7	2	0	67	137	204					0	204		
	Total	0	52	2	1	2		0	1	8	2	0	68	156	224					1	225	225	99%
New Mexico	Examination		0	0					0	2	0		2	23	25	3	8	0	1	12	37		
	Reciprocity	3	22	29	0	2	0		1	2	3	0	62	466	528					2	530		
	Total	3	22	29	0	2	0		1	4	3	0	64	489	553					14	567	567	90%
Oregon	Examination		6	2					351	4	3		366	97	463	4	1	0	0	5	468		
	Reciprocity	0	89	27	4	1	0	0		5	36	0	162	760	922					0	922		
	Total	0	95	29	4	1	0	0	351	9	39	0	528	857	1385					5	1390	1039	50%
Utah	Examination		0	0					1	140	1		142	64	206	5	0	0	0	5	211		
	Reciprocity	1	56	17	5	5	1	1	3		2	3	94	336	430					0	430		
	Total	1	56	17	5	5	1	1	4	140	3	3	236	400	636					5	641	501	49%
Washington	Examination		21	1					72	10	163		267	385	652	30	34	0	3	67	719		
	Reciprocity	1	177	26	6	8	0	0	120	12		0	350	1226	1576					27	1603		
	Total	1	198	27	6	8	0	0	192	22	163	0	617	1611	2228					94	2322	2159	67%
Wyoming	Examination		3	3					0	9	0		15	10	25	0	0	0	0	0	25		
	Reciprocity	0	13	23	0	3	0	0	0	7	0		46	164	210					0	210		
	Total	0	16	26	0	3	0	0	0	16	0		61	174	235					0	235	235	89%
Total West	Examination		2769	647					563	279	207		4465	2496	6961	258	571	100	126	1055	8016		
	Reciprocity	43	566	362	39	39	10	8	299	161	238	13	1778	16,712	18,490					35	18,525		
	Total	43	3335	1009	39	39	10	8	862	440	445	13	6243	19,208	25,451					1090	26,541	22,595	
Total Non-West	Examination		269	68					152	73	68		630			966	4438	253	745	6402			
	Reciprocity	21	1063	305	10	24	9	10	96	67	131	9	1745										
	Total	21	1332	373	10	24	9	10	248	140	199	9	2375										
Total United States	Examination		3038	715					715	352	275		5095			1224	5009	353	871	7457			
	Reciprocity	64	1629	667	49	63	19	18	395	228	369	22	3523										
	Total	64	4667	1382	49	63	19	18	1110	580	644	22	8618										

‡ Data on licenses by examination show state or country where medical education was received. Data on reciprocity and endorsement show state or country where previous license was held.

* Slightly overestimated because a statistically small percentage of new licensees who studied out-of-state are actually state residents.

** Data on out-of-state sources in 1956 are included for statistical convenience even though they could not have been practicing in 1955, causing a small inflation of the percentage.

Source: Annual Licensure Numbers, Journal of the American Medical Association.

TABLE 2

U.S. MEDICAL SCHOOLS, ENROLLMENTS, GRADUATIONS, 1957-1958

4 Year Schools		Students Enrolled			Graduations			
		Men	Women	Total	Men	Women	Total	Freshman
Alabama	Medical College of Alabama	266	23	289	63	5	68	81
Arkansas	Univ. of Arkansas School of Medicine	330	15	345	79	6	85	93
California	College of Medical Evangelists	367	17	384	91	5	96	112
	Univ. of Southern California School of Medicine	253	11	264	57	3	60	67
	Stanford Univ. School of Medicine	222	12	234	50	4	54	62
	Univ. of California School of Medicine, L. A.	186	9	195	47	0	47	49
	Univ. of California School of Medicine, S. F.	298	26	324	80	3	83	79
Colorado	Univ. of Colorado School of Medicine	294	24	318	75	4	79	85
Connecticut	Yale Univ. School of Medicine	289	20	309	67	5	72	79
D. C.	Georgetown Univ. School of Medicine	392	15	407	97	3	100	108
	George Washington Univ. School of Medicine	361	22	383	86	4	90	101
	Howard Univ. College of Medicine	287	33	320	59	8	67	103
Florida	Univ. of Miami School of Medicine	250	15	265	59	1	60	79
Georgia	Emory Univ. School of Medicine	272	6	278	65	1	66	74
	Medical College of Georgia	372	14	386	92	1	93	103
Illinois	Chicago Medical School	274	1	275	65	0	65	73
	Northwestern Univ. Medical School	497	22	519	128	3	131	130
	Stritch School of Medicine of Loyola Univ.	326	11	337	72	1	73	88
	Univ. of Chicago, The School of Medicine	265	23	288	67	3	70	72
	Univ. of Illinois, College of Medicine	633	44	677	140	10	150	190
Indiana	Indiana Univ. School of Medicine	565	18	583	135	3	138	158
Iowa	State Univ. of Iowa College of Medicine	421	13	434	101	3	104	120
Kansas	Univ. of Kansas School of Medicine	396	16	412	103	4	107	102
Kentucky	Univ. of Louisville School of Medicine	366	16	382	90	5	95	103
Louisiana	Louisiana State Univ. School of Medicine	415	19	434	90	5	95	125
	Tulane Univ. of Louisiana School of Medicine	486	17	503	123	5	128	134
Maryland	Johns Hopkins Univ. School of Medicine	272	21	293	70	5	75	74
	Univ. of Maryland School of Medicine	344	11	355	77	1	78	93
Massachusetts	Boston Univ. School of Medicine	263	28	291	64	7	71	74
	Harvard Medical School	482	30	512	125	10	135	114
	Tufts Univ. School of Medicine	409	21	430	104	5	109	114
Michigan	Univ. of Michigan Medical School	717	33	750	162	7	169	206
	Wayne State Univ. College of Medicine	267	15	282	65	7	72	75
Minnesota	Univ. of Minn. Medical School	468	21	489	107	6	113	131
Mississippi	Univ. of Miss. School of Medicine	245	8	253	42	2	44	80
Missouri	Univ. of Mo. School of Medicine	202	4	206	31	1	32	75
	St. Louis Univ. School of Medicine	455	12	467	116	1	117	121
	Washington Univ. School of Medicine	332	12	344	84	3	87	86
Nebraska	Creighton Univ. School of Medicine	276	7	283	63	1	64	77
	Univ. of Nebraska College of Medicine	315	12	327	82	1	83	87
New York	Albany Medical College	221	8	229	58	2	60	63
	Univ. of Buffalo School of Medicine	290	14	304	75	3	78	84
	Columbia Univ. College of Physicians and Surgeons	428	42	470	106	9	115	120
	Cornell Univ. Medical College	314	20	334	77	4	81	84
	New York Medical College	470	27	497	111	4	115	128
	New York Univ. College of Medicine	465	54	519	114	11	125	134
	State Univ. of N. Y. College of Medicine, N. Y.	539	50	589	133	12	145	153
	State Univ. of N. Y. College of Medicine, Syracuse	286	14	300	69	2	71	86
	Univ. of Rochester School of Medicine and Dentistry	276	7	283	71	2	73	71
North Carolina	Duke Univ. School of Medicine	301	14	315	77	4	81	79
	Bowman Gray School of Medicine of Wake Forest College	190	14	204	48	1	49	54
	Univ. of No. Car. School of Medicine	250	7	257	55	3	58	69

TABLE 2 (Cont.)

4 Year Schools		Students Enrolled			Graduations			
		Men	Women	Total	Men	Women	Total	Freshman
Ohio	Univ. of Cincinnati College of Medicine	324	19	343	74	2	76	93
	Western Reserve Univ. School of Medicine	294	31	325	70	7	77	82
	Ohio State Univ. College of Medicine	554	18	572	137	2	139	150
Oklahoma	Univ. of Okla. School of Medicine	355	17	372	81	2	83	100
Oregon	Univ. of Oregon Medical School	276	16	292	66	4	70	79
Pennsylvania	Hahnemann Medical College & Hospital	377	17	394	92	4	96	108
	Jefferson Medical College of Philadelphia	682	0	682	158	0	158	178
	Temple Univ. School of Medicine	461	34	495	112	6	118	136
	Univ. of Pa. School of Medicine	490	19	509	118	8	126	128
	Women's Medical College of Pennsylvania	0	185	185	0	45	45	51
	Univ. of Pittsburgh School of Medicine	349	16	365	76	4	80	102
South Carolina	Medical College of South Carolina	294	11	305	73	2	75	80
Tennessee	Univ. of Tenn. College of Medicine	738	30	768	169	13	182	220
	Meharry Medical College	245	22	267	55	2	57	73
	Vanderbilt Univ. School of Medicine	190	7	197	46	0	46	53
Texas	Univ. of Texas Southwestern Medical School	367	21	388	85	5	90	94
	Univ. of Texas Medical Br., Galveston	545	28	573	143	8	151	132
	Baylor Univ. College of Medicine	309	12	321	75	3	78	86
Utah	Univ. of Utah School of Medicine	205	2	207	48	0	48	58
Vermont	Univ. of Vt. College of Medicine	165	14	179	36	2	38	51
Virginia	Univ. of Va. School of Medicine	276	14	290	63	3	66	77
	Medical College of Virginia	334	23	357	93	4	97	85
Washington	Univ. of Wash. School of Medicine	67	3	70	68	4	72	75
Wisconsin	Univ. of Wis. School of Medicine	298	22	320	70	6	76	90
	Marquette Univ. School of Medicine	373	20	393	90	6	96	105
Puerto Rico	Univ. of Puerto Rico School of Medicine	162	26	188	41	4	45	53
	SCHOOLS OF BASIC MEDICAL SCIENCES							
New Hampshire	Dartmouth Medical School	48	0	48	0	0	0	24
North Dakota	Univ. of N. D. School of Medicine	76	2	78	0	0	0	40
South Dakota	Univ. of S. D. School of Medical Sciences	77	3	80	0	0	0	46
W. Virginia	West Virginia Univ. School of Medicine	272	16	288	0	0	0	40
	SCHOOLS DEVELOPING NEW PROGRAMS							
Florida	Univ. of Florida College of Medicine	88	4	92	0	0	0	51
New Jersey	Seton Hall College of Medicine and Dentistry	148	9	157	0	0	0	80
New York	Albert Einstein College of Medicine	230	15	245	0	0	0	98
	TOTALS	27,829	1,644	29,473	6,506	355	6,861	8,030

TABLE 3

The National Picture—NUMBER OF SCHOOLS—By State & Type of Control

STATE AND REGION	ALL MEDICAL SCHOOLS			4-YEAR MEDICAL SCHOOLS			SCHOOLS OF BASIC MEDICAL SCIENCES		
	Total	Public	Private	Total	Public	Private	Total	Public	Private
United States	85	40	45	81	37	44	4	3	1
New England									
Main	0	—	—	0	—	—	0	—	—
New Hampshire	1	0	1	0	—	—	1	0	1
Vermont	1	1	0	1	1	0	0	—	—
Massachusetts	3	0	3	3	0	3	0	—	—
Rhode Island	0	—	—	0	—	—	0	—	—
Connecticut	1	0	1	1	0	1	0	—	—
Mid-Atlantic									
New York	10	2	8	10	2	8	0	—	—
New Jersey	1	0	1	1	0	1	0	—	—
Pennsylvania	6	0	6	6	0	6	0	—	—
Delaware	0	—	—	0	—	—	0	—	—
Maryland	2	1	1	2	1	1	0	—	—
Dist. of Columbia	3	0	3	3	0	3	0	—	—
Great Lakes									
Michigan	2	2	0	2	2	0	0	—	—
Ohio	3	2	1	3	2	1	0	—	—
Indiana	1	1	0	1	1	0	0	—	—
Illinois	5	1	4	5	1	4	0	—	—
Wisconsin	2	1	1	2	1	1	0	—	—
Plains									
Minnesota	1	1	0	1	1	0	0	—	—
Iowa	1	1	0	1	1	0	0	—	—
Missouri	3	1	2	3	1	2	0	—	—
North Dakota	1	1	0	0	—	—	1	1	0
South Dakota	1	1	0	0	—	—	1	1	0
Nebraska	2	1	1	2	1	1	0	—	—
Kansas	1	1	0	1	1	0	0	—	—
Southeast									
Virginia	2	2	0	2	2	0	0	—	—
West Virginia	1	1	0	0	—	—	1	1[1]	0
Kentucky [2]	1	0	1	1	0	1	0	—	—
Tennessee	3	1	2	3	1	2	0	—	—
North Carolina	3	1	2	3	1	2	0	—	—
South Carolina	1	1	0	1	1	0	0	—	—
Georgia	2	1	1	2	1	1	0	—	—
Florida	2	1	1	2	1	1	0	—	—
Alabama	1	1	0	1	1	0	0	—	—
Mississippi	1	1	0	1	1	0	0	—	—
Louisiana	2	1	1	2	1	1	0	—	—
Arkansas	1	1	0	1	1	0	0	—	—

TABLE 3 (Cont.)

STATE AND REGION	ALL MEDICAL SCHOOLS			4-YEAR MEDICAL SCHOOLS			SCHOOLS OF BASIC MEDICAL SCIENCES		
	Total	Public	Private	Total	Public	Private	Total	Public	Private
Southwest									
Oklahoma	1	1	0	1	1	0	0	—	—
Texas	3	2	1	3	2	1	0	—	—
New Mexico	0	—	—	0	—	—	0	—	—
Arizona	0	—	—	0	—	—	0	—	—
Rocky Mountain									
Montana	0	—	—	0	—	—	0	—	—
Idaho	0	—	—	0	—	—	0	—	—
Wyoming	0	—	—	0	—	—	0	—	—
Colorado	1	1	0	1	1	0	0	—	—
Utah	1	1	0	1	1	0	0	—	—
Far West									
Washington	1	1	0	1	1	0	0	—	—
Oregon	1	1	0	1	1	0	0	—	—
Nevada	0	—	—	0	—	—	0	—	—
California	5	2	3	5	2	3	0	—	—
Alaska	0	—	—	0	—	—	0	—	—
Hawaii	0	—	—	0	—	—	0	—	—
Puerto Rico	1	1	0	1	1	0	0	—	—

[1] The 2-year school is developing a 4-year program.

[2] Construction has begun on a 4-year school at Lexington.

Source: Medical Education in the United States and Canada. *Journal of the American Medical Association* 165: 1406-1407, November 16, 1957.

TABLE 4

THE NATIONAL PICTURE—APPLICANTS AND ENTERING FRESHMEN, 1957-58

State and region	Population 18-24 yrs. (in 000's)	MEDICAL SCHOOL APPLICANTS		MEDICAL SCHOOL FRESHMEN	
		Number	Percent of college-age population	Number	Percent of applicants
Continental United States	15,481	15,317	0.10	7,821	51
New England					
Maine [1]	94	41	.04	16	51
New Hampshire	50	37	.07	22	49
Vermont	38	41	.11	25	56
Massachusetts	418	496	.12	215	47
Rhode Island [1]	71	69	.10	28	35
Connecticut	183	219	.12	102	49
Mideast					
New York	1,333	2,341	.18	1,066	47
New Jersey	434	678	.16	316	44
Pennsylvania	1,001	1,206	.12	587	47
Delaware [1]	34	29	.09	17	45
Maryland	252	231	.09	114	55
District of Columbia	64	131	.20	60	37
Great Lakes					
Michigan	699	592	.08	304	53
Ohio	806	776	.10	418	51
Indiana	416	357	.09	181	53
Illinois	817	809	.10	404	53
Wisconsin	338	301	.09	164	57
Plains					
Minnesota	297	240	.08	163	60
Iowa	257	197	.08	157	69
Missouri	381	252	.07	143	60
North Dakota	63	57	.09	45	75
South Dakota	66	60	.09	36	65
Nebraska	124	161	.13	102	63
Kansas	180	168	.09	113	61
Southeast					
Virginia	374	257	.07	161	58
West Virginia	232	163	.07	67	46
Kentucky	308	251	.08	115	52
Tennessee	382	284	.07	229	78
North Carolina	488	301	.06	160	49
South Carolina	260	195	.08	103	50
Georgia	392	334	.09	171	46

TABLE 4 (Cont.)

State and region	Population 18-24 yrs. (in 000's)	MEDICAL SCHOOL APPLICANTS		MEDICAL SCHOOL FRESHMEN	
		Number	Percent of college-age population	Number	Percent of applicants
Florida	324	381	.12	183	54
Alabama	350	232	.07	115	54
Mississippi	236	220	.09	124	57
Louisiana	312	271	.09	150	61
Arkansas	195	174	.09	106	64
Southwest					
Oklahoma	214	244	.11	130	50
Texas	858	651	.08	335	55
New Mexico [1]	87	35	.04	19	69
Arizona [1]	104	67	.06	36	64
Rocky Mountain					
Montana [1]	61	48	.08	25	40
Idaho [1]	67	46	.07	23	50
Wyoming [1]	30	37	.12	17	43
Colorado	139	166	.12	84	49
Utah	87	101	.12	63	52
Far West					
Washington	242	208	.09	92	51
Oregon	168	125	.07	87	58
Nevada [1]	18	13	.07	3	46
California	1,137	1,024	.09	466	39
Alaska				91	
Hawaii					

[1] States without medical schools.

Sources: *Current Population Reports,* U. S. Bureau of the Census Series P-25, No. 132 (Feb. 20, 1956). Population projection as of July 1, 1958—table 1, col. 2.
Medical school applicants, 1956-57. *Journal Medical Education,* Jan. 1958, p. 56.
Medical school freshmen, 1957-58. *Journal American Medical Association,* Education No., Nov. 15, 1958, pp. 1508-9.

TABLE 5

NUMBER OF MEDICAL SCHOOL GRADUATES–SELECTED YEARS

YEAR	ALL U.S. SCHOOLS	PUBLIC SCHOOLS	PRIVATE SCHOOLS
1956 - 57	6,796	3,134	3,662
1954 - 55	6,977	3,310	3,667
1949 - 50	5,553	2,410	3,143
1945 - 46	5,826	2,234	3,592
1939 - 40	5,097	1,981	3,116
1934 - 35	5,101	1,830	3,271
1930 - 31	4,735	1,745	2,990

Source: Medical Education in the United States and Canada. *Journal of the American Medical Association* (annual issues).

TABLE 6

PHYSICIANS AND OSTEOPATHIC PHYSICIANS IN THE UNITED STATES, BY TYPE OF PRACTICE: 1957

Type of practice	Physicians		Osteopathic physicians	
	Number	Rate per 100,000 population	Number	Rate per 100,000 population
Total	226,625	132.4	13,692	8.0
Private practice	155,827	91.1	9,501	5.6
General practice and part-time specialty	81,443	47.6	8,656	5.1
Full-time specialty	74,384	43.5	845	0.5
Not in private practice	60,137	35.1	1,205	0.7
Hospital service (except Federal)	36,371	21.2	872	0.5
Teaching, research, public health, other	7,168	4.2	321	0.2
Federal Government	16,598	9.7	12	[1]
Retired, not in practice	10,661	6.2	2,986[2]	1.7

[1] Less than 0.05.

[2] Includes 2,006 osteopathic physicians who did not report type of practice.

Source: *Physicians for a Growing America, Surgeon General's Report* (Washington: U.S. Department Health, Education and Welfare, 1959), p. 10.

TABLE 7

AGE DISTRIBUTION OF PRACTICING PHYSICIANS, 1950

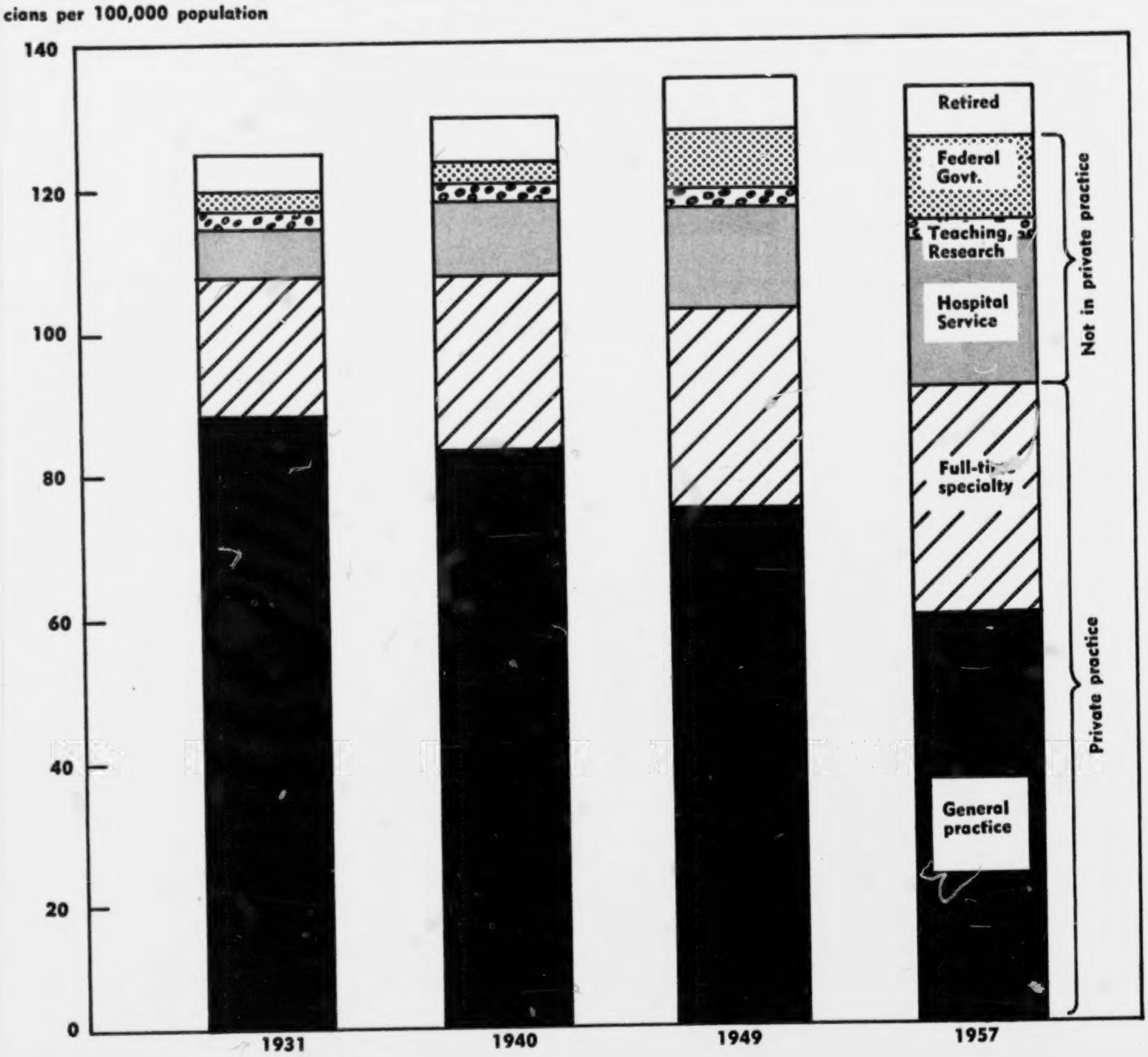
								PER CENT		
State	All Ages	Under 35	35-44	45-54	55-64	65-74	75 & Over	Under 35	65 & Over	55 & Over
Arizona	875	198	318	186	103	55	15	22.6	8.0	19.7
California	16,762	4,512	5,462	3,555	1,988	981	264	26.9	7.4	19.2
Colorado	1,946	579	557	341	228	166	75	29.8	12.4	24.1
Hawaii	475	119	185	122	33	— 16 —		25.1	3.4	10.3
Idaho	482	122	159	91	52	51	7	25.3	12.0	22.8
Montana	561	120	178	114	72	61	16	21.4	13.7	26.5
Nevada	204	24	69	56	36	14	5	11.8	9.3	26.9
New Mexico	564	124	199	105	62	48	26	22.0	13.1	24.1
Oregon	1,829	510	590	335	208	148	38	27.9	10.2	21.5
Utah	796	292	213	132	97	50	12	36.7	7.8	19.9
Washington	2,752	739	893	536	297	226	61	26.9	10.4	21.2
Wyoming	244	37	83	60	38	17	9	15.2	10.7	26.2
West	27,490	7,376	8,456	5,633	3,214	1,829	532	26.8	8.6	20.3
U. S.	192,422	53,054	55,518	38,529	24,672	15,589	5,060	27.6	10.7	23.6

* Alaska—Not available

Source: *Health Manpower Source Book*, Sec. 5: Industry and Occupation Data, 1950. Hawaii-Territorial Budget Office.

APPENDIX FIGURE 1

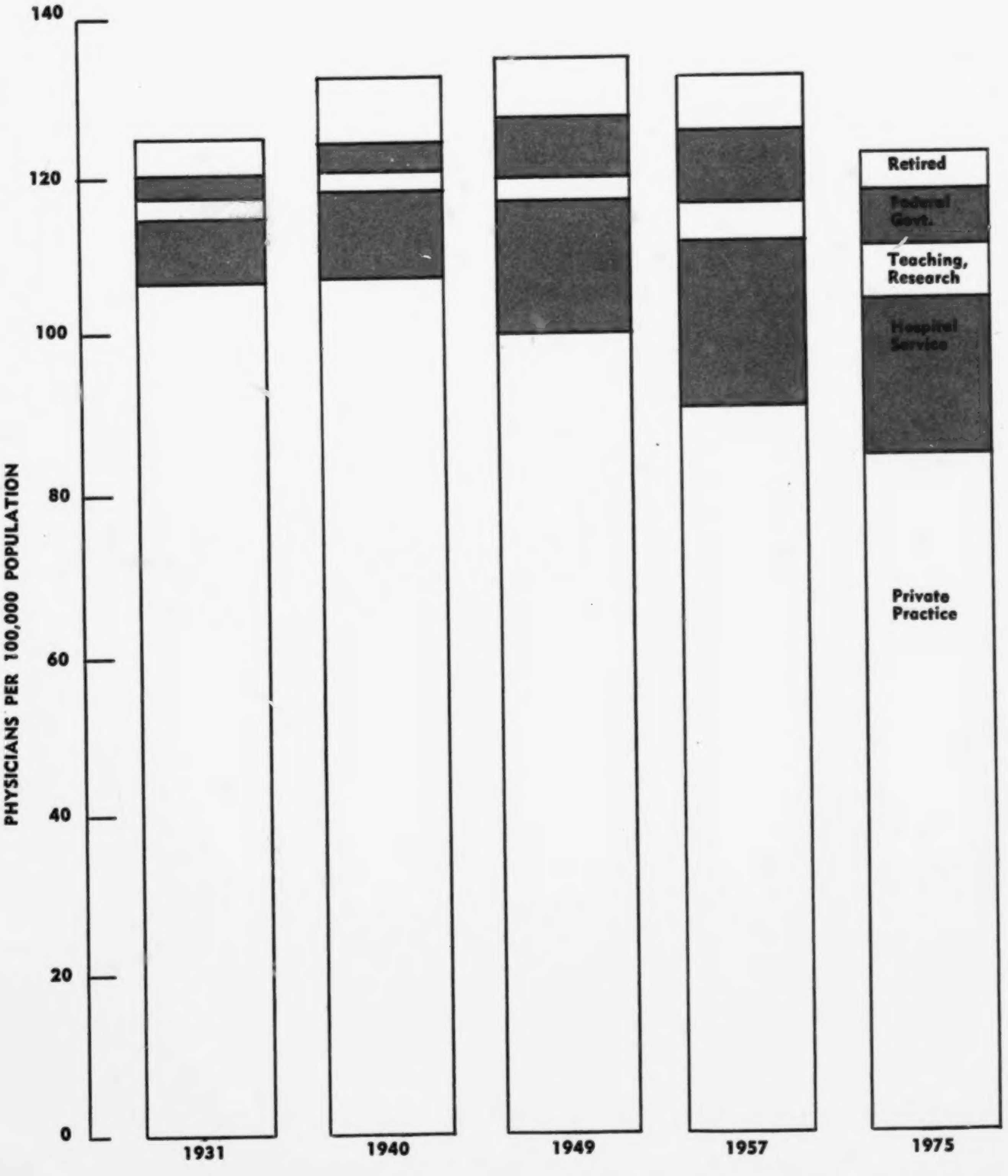
DECLINE OF RATIO OF PHYSICIANS IN PRIVATE PRACTICE



Source: **Health Manpower Sourcebook, Sec. 9: Physicians, Dentists, Nurses,** U. S. Department of Health, Education, and Welfare, 1959, p. 26.

APPENDIX FIGURE 2

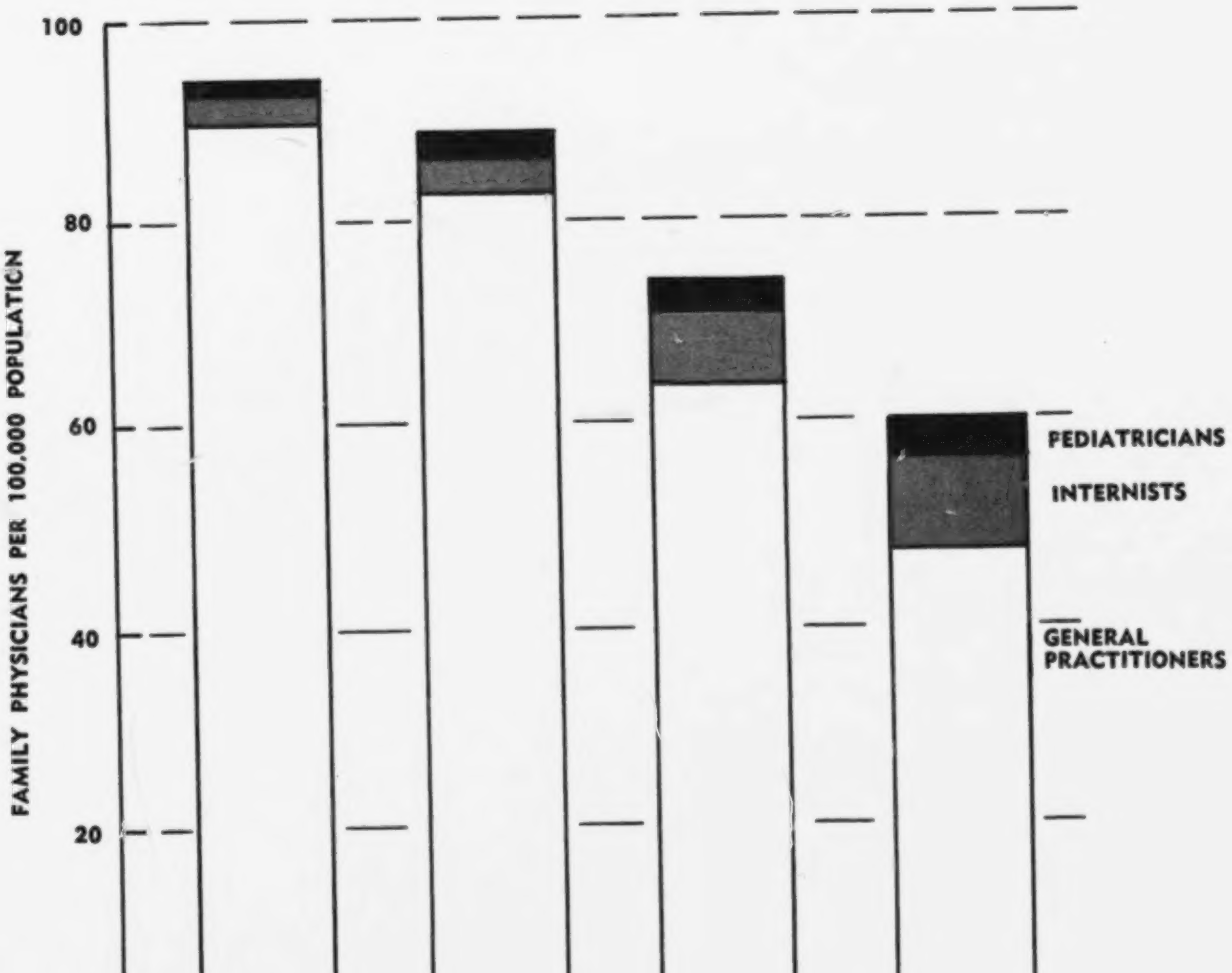
PHYSICIANS PER 100,000 POPULATION, BY TYPE OF PRACTICE, 1931-1957 AND ESTIMATED 1975



Source: **Physicians for a Growing America,** Report of the Surgeon General's Consultant Group on Medical Education, U. S. Department of Health, Education, and Welfare (September, 1959), p. I-17.

APPENDIX FIGURE 3

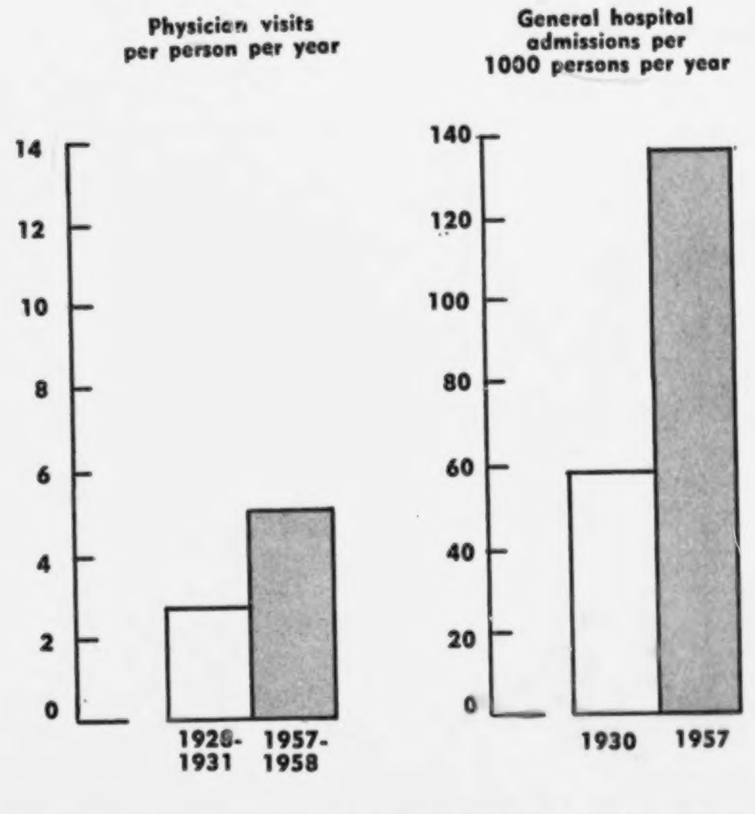
FAMILY PHYSICIAN POTENTIAL PER 100,000 POPULATION, BY COMPONENT: 1931-1957



Source: **Physicians for a Growing America,** Report of the Surgeon General's Consultant Group on Medical Education, U. S. Department of Health, Education, and Welfare (September, 1959), p. I-23a.

APPENDIX FIGURE 4

Physician visits and general hospital admissions in relation to population: 1928-31 and 1957-58



Source: Collins, Selwyn D., Frequency and Volume of Doctors' Calls Among Males and Females in 9,000 Families, Based on Nation-Wide Periodic Canvasses, 1928-31, Public Health Reports, Vol. 55:44, Nov. 19, 1940.
Health Statistics from the U. S. National Health Survey. Selected Survey Topics, July 1957-June 1958. Series B-5. Annual Hospital Number of J.A.M.A. for 1931.
Administrators Guide Issue of **Hospitals**, August 1, 1958.

APPENDIX G

Doctors of Osteopathy

There are, at present, 13,300 actively practising osteopaths. At the one to 700 patient ratio, osteopaths serve the needs of nearly 9½ million people.

TABLE 8

DISTRIBUTION OF ACTIVE OSTEOPATHIC PHYSICIANS (EXCLUDING THOSE NOT IN PRIVATE PRACTICE) IN THE WESTERN REGION BY SIZE OF CITY[1]

(As of December 31, 1957)

POPULATION OF CITIES	Alaska[2]	Hawaii	Arizona	California	Colorado	Idaho	Montana	New Mexico	Oregon	Utah	Washington	Wyoming	TOTAL
Under 1,000	0		5	104	19	0	2	9	21	0	10	0	170
1,000-2,499	0		10	77	19	3	3	14	15	0	9	3	153
2,500-4,999	0		5	95	13	7	2	13	12	1	8	7	163
5,000-9,999	0		9	118	19	1	9	13	15	2	8	1	195
10,000-24,999	0		5	320	34	18	13	11	15	2	13	4	435
25,000-49,999	0		24	186	9	12	17	6	16	3	21	1	295
50,000-99,999	0		0	171	3	0	0	38	0	3	0	0	215
100,000-249,999	0		40	160	0	0	0	0	0	9	19	0	228
250,000-499,999	0		0	105	80	0	0	0	37	0	74	0	296
500,000-999,999	0		0	27	0	0	0	0	0	0	0	0	27
1,000,000-over	0		0	631	0	0	0	0	0	0	0	0	631
TOTAL	0	14	98	1994	196	41	46	104	131	20	162	16	2808

NOTE: 1. These statistics were compiled on the basis of an I.B.M. study and the totals do not coincide with statistics published in the 1958 A.O.A. Directory because doctors not in active practice are not included.

2. Since the date of this compilation one D.O. has located at Anchorage, Alaska, population 11,250.

SOURCE: Data supplied by American Osteopathic Association, August, 1958.

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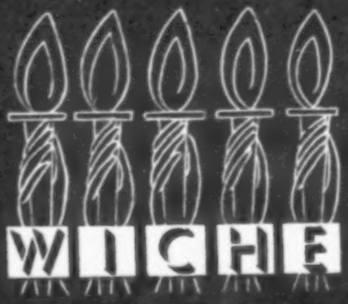
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